The LXE 2325 is obsolete. Revision C contains system configuration instruction for 2325's shipped with an abbreviated version of ROM-DOS. System configuration instructions for the expanded version of ROM-DOS begin with Revision D. Please contact your LXE customer support representative for assistance.

2325
Reference Guide

2325A137REFGD
March 2000
E-EQ-2325RG-C-ARC

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2 3 2 5 A 1 3 7 R E F G D

R E V I S I O N B

Regulatory Notices

Notice:
LXE Inc. reserves the right to make improvements or changes in the products described in this manual at any time without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, LXE assumes no liability resulting from any errors or omissions in this document, or from the use of the information contained herein.

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LXE is a registered trademark of LXE Inc. All other brand or product names are trademarks or registered trademarks of their respective companies or organizations.
Note: The original equipment's Reference Manual is copyrighted by Percon® Inc. *This* manual has been amended by LXE® Inc., for the 2325 and Docking Stations with Percon's express permission.

Notice:
The long term characteristics or the possible physiological effects of radio frequency electromagnetic fields have not been investigated by UL.

FCC Information:

This device complies with FCC Rules, part 15. Operation is subject to the following conditions:

1. This device may not cause harmful interference
   and
2. This device must accept any interference that may be received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning: Changes or modifications to this device not expressly approved by LXE, Inc., could void the user's authority to operate this equipment.

Shielded cables must be used with this unit to ensure compliance with the FCC Class A limits.

Docking Cradles Product Label Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

EMC Directive Requirements:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Industry Canada:

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Approvals:	**EMI / EMC Standards:**	**Transceiver:**	**Safety Standards:**
	FCC Part 15 Subpart B EN 50022 Class A EN50082-1	FCC Part 15, Subpart C ETSI 300 328 IC-RSS 210	EN 60825-1 CDRH Class 2

Revision Notice

2325 Reference Guide

Upgrade from Revision A to Revision B

The revision B upgrade to this manual contains changes made to the following sections:

Section	**Action**
Entire Manual	Replace the word "terminal" with "computer."
Chapter 1 - Introduction and Specifications	Replace "Contacting LXE" with revised text.
Chapter 2 - Using Advanced Features	Add "Troubleshooting - Enable I 2 of 5." Add new sections: "Proxim Configuration Settings" and "Lucent Configuration Settings."
Chapter 3 - Software Configuration	Add section titled "Terminal Emulation."
Chapter 4 - The Configuration Utility	Replace Figure 4-14, 4-16, and 4-18. Add new 4-19.
Chapter 7 - The Docking Stations	Add non-rechargeable battery warning graphic and text. Add section titled "Vehicle Mounted DC Single Dock."
Appendix B - Programming Parameters	Remove section titled "Terminal Emulation in a 2.4GHz Radio System." Add two new configuration parameters – Ames Enable and Spotting Beam Enable.

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Chapter 1
Introduction and Specifications

Introduction

This reference guide is a supplement to the "2325 Installation and Operator's Guide." It contains technical information about the 2325's system configuration, disk drives, utilities, and DOS commands. It also provides information about using PC cards with the 2325, resetting the 2325, and using the docking stations. Included in the appendices are a table of configuration parameters, barcodes for setting those parameters, and connector configurations for the 2325, One Dock, and Four Slot Dock.

This manual is provided as a reference guide for system administrators, developers, and programmers who want to create end-user solutions for 2325 DOS portable computers. It is not intended for use by first-time 2325 users.

LXE offers two basic configurations:

- RF Configuration – a 2325 *with* a PCMCIA radio and antenna. The unit may be configured with or without an integrated laser scanner.
- Batch Configuration – a 2325 *without* a PCMCIA radio and antenna. The unit may be configured with or without an integrated laser scanner.

Both configurations can use all three docking stations without requiring adjustment.

2325's running LXE's Terminal Emulation programs require a PCMCIA radio, antenna and RF configuration files.

	The "2325 Installation and Operator's Guide (LXE DocID 2325A136OPGDWW)" is directed toward the 2325 operator. It is delivered with each 2325. It contains safety warnings, descriptions of the controls and connectors, and instructions for day to day operation.

Document Conventions

This reference guide uses the following document conventions:

Convention	Meaning
ALL CAPS	All caps are used to represent disk directories, file names, and application names.
Menu|Choice	Rather than use the phrase "choose the Save command from the File menu", this manual uses the convention "choose File|Save".
"Quotes"	Indicates the title of a book, chapter or a section within a chapter (for example, "Document Conventions").
[ ]	Indicates a key on the keyboard (for example, [CTL]).
	Indicates a reference to other documentation.
Note:	Keyword that indicates immediately relevant information.
CAUTION	Keyword that indicates a cautionary warning to follow.
ATTENTION	Keyword that indicates vital or pivotal information to follow.

Technical Specifications

General

CPU	AM-SC400 (486) 33MHz
Operating Temperature	-10C° to +50C° (14°F to 120°F)
Sealing	Minimal dust and rain resistance
Humidity	0 to 95% non-condensing
Drop	4 foot multiples
Usage	Indoors, Limited outdoors

Physical

Parameter	Specification
Height	8.65 in (21.97 cm)
Width	3.5 in (8.9 cm)
Depth	1.6in (4.1 cm)
Weight	With batteries 15.5 oz. (439 grams) With laser module 18 oz. (510 grams)

Keyboard

Parameter	Specification
Type	Rubber Membrane
Size	57 (full alpha/numeric)
Function Keys	5 dedicated - FN, CTL, ALT, 2 special
Shift Keys	5 Shifted Function Keys
Shared Numeric	No
Arrow Keys	4, implemented on toggle
Key colors	5
Emulation	LXE ANSI Plus, TN3270, TN5250

Display

Parameter	Specification
Type	LCD, FSTN (Black on White)
Writable Area	Approximately 2.2” x 1.75” (5.6 cm x 4.4 cm) plus icon area
Char	16 line by 20 character
System Status	Dedicated icons (17)
Graphics	128 x 160
Prog. Interface	BIOS/Memory Map
Lighting	EL, White
Contrast Adjustment	Keyboard adjustable

Battery

Main - Rechargeable

Technology	Nickel Metal Hydride (NiMH) Battery Pack
Configuration	3 x AA
Capacity	1250 mAH
Protection	Polyswitch PTC and Klixon circuit breaker
Life, Operating	> 8 hrs. batch; > 6 hrs with RF link
Life, Storage	> 14 days data retention, with fully charged pack
Charging	In 4 Slot Dock: =< 15 hrs; In 1 Slot dock: =< 3 hrs.

Backup - Rechargeable

Type	Rechargeable Lithium (Li)
Data Retention Period	> 1 hour
Recovery from Cutoff	1M min, 5M typ after 5M operation

Power Management

Parameter	Specification
Automatic Shutdown	Unit turns off when battery door is removed.
Shutdown Timer	Yes
Low Battery Indication	Yes
APM Compatible	Yes
Turn on to Previous State	Yes
Batteries required for Operation	Yes

Memory

RAM	8 Mbytes	
	Mapping	Contiguous from 0000
	Upgradability	Factory upgrade
Flash	2 Mbytes, 3.3V (default: 2M)	
	Mapping	Combined DOS and BIOS

Laser Module

Long range scanner is identified by an etched square in the center of the mirror inside the integrated laser module.

Location	At top of unit	
Connections:		
	Pin 1 - Laser Sync in	Input, 10K PU
	Pin 2 - Barcode data in	Input, 10K PU
	Pin 3 - Good Read out	I/O, >50mA high drive, 100K Pull-Down low drive and Zin
	Pin 4 - Scan enable out	I/O, 10K PU, OC low drive
	Pin 5 - Laser Trig in	Input, 10K PU
	Pin 6 - Laser scan enable out	I/O, 10K PU, OC low drive
	Pin 7 - Ground	
	Pin 8 - Ground	
	Pin 9 - 5V Pwr. Out (300mA max.)	
Shield	ESD Gnd	

Radio PC Card

LXE 6400 PCMCIA 2.4GHz Type II

Parameter	Specification
Bus Interface:	PCMCIA 2.0, Type II
Radio Frequencies:	2.4 - 2.4835 GHz FH SS
RF Data Rates:	1.6 Mbps
RF Power Level:	100 mW
Channels	15
Connectivity:	Novell, TCP/IP, Ethernet, NDIS, ODI
Operating Temperature	60° C (140° F)

LXE 6500 PCMCIA 2.4GHz Type II

Parameter	Specification
Bus Interface:	PCMCIA 2.0, Type II
Radio Frequencies:	2.4 - 2.4835 GHz IEEE MAP 802.11 DS SS
Range	1400 ft dependant on speed and environment
RF Data Rates:	2 or 1 Mbps
RF Power Level:	30 mW nominal
Channels	11 US, 13 Europe, 4 France, 1 Japan
Connectivity:	Novell, TCP/IP, Ethernet, ODI

Parameter	Specification
Supply Current w/o Encryption	Doze Max 9mA, Receive Max 240mA, Transmit Max 300mA (with encryption, add 10mA)
Output Power	15 dBm (nominal)
Operating Temperature	0°C to 55°C (32°F to 131°F)
Security	RC4 IEEE 802.11 compliant encryption

PC Card

Parameter	**Specification**
Physical	One only Type 2 with custom ejector
Location	Bottom of unit
Connections	Per PCMCIA specifications
RF Usage	Side mounted antenna
Memory usage	ATA Flash
Modem usage	Cable exits card end, not recommended
Power Management	Not supported
Vpp	5V only
Hot Insertion	Not supported
Special Features	Covered by door

Serial/Accessory

Physical	10 Pin Modular Socket	
Location	Bottom of unit	
Interface	Elan 16550 compatible UART, external serial converter	
Pin Usage:		
	Serial Outputs	(RS-232 output levels)
		Pin 5 - TXD
		Pin 4 - RTS
	Serial Inputs	(inputs allow RS-232 or TTL)
		Pin 3 - RxD
		Pin 9 - CTS
		Pin 1 - DCD
		Pin 7 - RI (Wake on RI enabled for use in 4 slot dock)
	Power and Ground	
		Pin 8 - GND
		Pin 6 - Bat (Protected by 1.1A Polyswitch)
		Pin 2 - 5V out, switched <300mA
		Pin 10 - Chassis ground
Dock Usage	Serial Data I/O, Bat. Chg.	
Cable Usage	Serial Data I/O	

Contacting LXE

LXE offers a variety of services to help you with your questions. LXE has an *automated attendant phone system* to help direct your call to the proper department or individual.

Product Information

To obtain information concerning LXE products contact your Project Coordinator at **(770) 447-4224 (USA) or +31 346 217070 (Europe)** if you know their extension, otherwise contact the LXE customer support help line at **(770) 449-0154 (USA) or +31 346 217070 (Europe)**.

Additional Training

To obtain information on training, contact the Manager, Technical Services at **(770) 447-4224 extension 3412 (USA) or +31 346 217070 (Europe)**.

Sales Support

To obtain sales support contact your Project Coordinator at **(770) 447-4224 (USA) or +31 346 217070 (Europe)**, if you know their extension, otherwise:

Ordering Equipment

To place an order or get pricing information on additional LXE equipment or accessories contact LXE Sales at **(770) 447-4224 (USA) or +31 346 217070 (Europe)** and select **option 2 (USA) or +31 346 217070 (Europe).**

Spare Parts

To order spare parts or obtain information on spare parts contact the LXE customer support help line at **(770) 449-0154 (USA) or +31 346 217070 (Europe)**.

Technical Support

To obtain technical support for LXE equipment:

- Have a copy of your Field Service Installation Report or last Field Service Report on hand (if available).
- Call LXE Technical Support at **(770) 449-0154 (USA) or +31 346 217070 (Europe)**.

Repair

To return equipment for repair:

- For DOS based products, ensure that the hard disk has been properly backed-up. LXE assumes no liability for the data stored on the hard drive.
- Remove rechargeable battery from all battery-powered devices.
- Have model and serial numbers ready.
- Equipment _____
- Model Number _____
- Serial Number _____
- Be prepared to give a description of the problem.
- Contact Repair Services at **(770) 449-0154 (USA) or +31 346 217070 (Europe)**.
- Obtain a Return Authorization Number (RA Number).
- Place a copy of the equipment configuration parameters from the last Field Service Report (if available) in the package with the equipment.
- Write the RA number on the airbill in the Reference section and on the outside of the package.
- Return equipment to:

LXE Repair Services
125 Technology Parkway
Norcross, GA 30092

Repair Status

To obtain the status of hardware repairs:

- Have the Return Authorization Number (RA Number) ready.
- Contact Repair Services at **(770) 449-0154 (USA) or +31 346 217070 (Europe)**.

Preventive Maintenance Inspections (PMI)

To obtain information concerning Preventive Maintenance Inspections for LXE equipment, contact the PMI Field Coordinator at **(770) 447-4224 extension 3452** or contact the LXE customer support help line at **(770) 449-0154 (USA) or +31 346 217070 (Europe)**.

Manuals and Accessories

Manuals

2325 Installation and Operator's Guide	2325A136OPGDWW
2325 Docking Station Operator's Guide	2325A139OPGDWW
ANSI Plus Reference Guide	ANSIPA136REFGD
TN5250 Terminal Reference Guide	TN5250A136RFGD
TN3270 Terminal Reference Guide	TN3270A136RFGD

Foreign Language translations of Operator's Guides are available. Contact LXE for DocID numbers.

Accessories

Dock, single slot	2325A001DOCKSINGLE
Dock, four slot	2325A002DOCKFOUR
Dock power supply (110V)	2325A301PSDOCK110
Dock power supply (220V)	2325A302PSDOCK220
Dock serial cable (9 x 25 PIN)	2325A052CBLDOCK925
Serial cable RJ-DB9	2325A051CBLRJDB9
NiMH battery, 2325, 1250mAh	2325A376BATTNIMH850
Single slot battery charger (110V)	2325A377CHGR1US
Single slot battery charger with Euro (220V)	2325A378CHGR1EU
Single slot battery charger with IEC 320 (220V)	2325A379CHGR1IEC
4 slot battery charger with PS, US cord	2325A380CHGR4US
4 slot battery charger with PS, Europe	2325A381CHGR4EU
4 slot dock to dock cable, 2 ft.	2325A053CBL2DOCK
4 slot dock to dock cable, 10 ft.	2325A054CBL10DOCK
Holster	2325A401HOLSTER
Soft case without laser	2325A402CASE
Soft case with laser	2325A403CASELASER
Holder, vehicle, non-powered	2325A003HOLDER
Developer's Tool Kit	2325A476DEVKIT
Universal Program Generator	2325A477UNIPROGEN
Configuration Utility	2325A478CONFIGUTIL
PCMCIA SRAM Card, 2 MB	9000A101PCC2SRAM

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Chapter 2
Using Advanced Features

Introduction

This chapter provides information about advanced features of the 2325 computers. It does not cover basics, such as use of the keypad and display. For basic information about the 2325, see the "2325 Installation and Operator's Guide."

Changing the Laser Module's Orientation

Normally, the laser window faces the left side of the 2325 for easy right-handed scanning. If you prefer to hold the 2325 in your left hand while scanning, you can turn the laser module around.

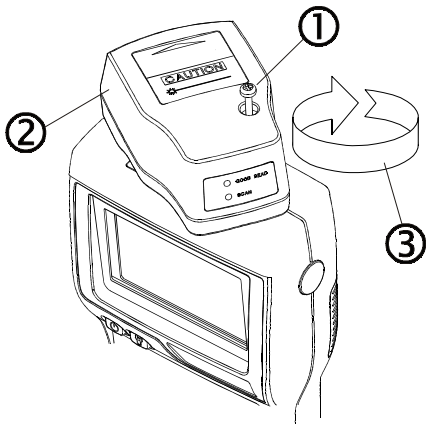

Figure 2-1 Rotating the Laser Module

1 Screw

2 Laser module

3 Rotate 180° clockwise only.

To rotate the laser module, complete the following steps:

1. Unscrew the screw that secures the module to the main part of the 2325. The screw will come loose but will not come out of the laser module. *Do not try to force it out.*
2. Gently lift the laser module away from the top of the main part of the 2325. The module will not completely separate from the rest of the 2325. Do not try to force the units apart.
3. Swivel the module around until the laser window faces the opposite direction. The module can rotate in only one direction. *Do not try to force it the other way.*
4. Press the laser module back into the main part of the 2325, and tighten the screw.

Note: After changing the laser module's orientation, you may want to swap the operations of the triggers. (See the next section "Programming the Laser Triggers.")

Programming the Laser Triggers

Normally, the left trigger operates the laser or another barcode reader attached to the 2325, and the right trigger toggles the unit in and out of Function mode. You can reprogram one or both of the laser triggers to act as equivalents, or "aliases," of keypad keys.

To turn a trigger into an alias for a keypad key:

First, hold down the [FN] key and press the [SWP] key. The program-trigger icon should appear in the display. Press the trigger that you want to change, and then press the key that you want to assign to the trigger.

For example, to turn the right trigger into an alias for the [ENTER] key, hold down the [FN] key and press the [SWP] key to enter program-trigger mode. Then press and release the right trigger, and press the [ENTER] key. The right trigger will now work as a second [ENTER] key.

To change a reassigned trigger back to a laser trigger, put the 2325 into program-trigger mode and press the trigger twice.

Resetting the 2325

One of the critical features of any portable data-collection device is its ability to protect against accidental data loss. In the event a 2325 becomes "locked up" or otherwise in a state in which data can no longer be processed, you can use any of four methods to reset the unit. This chapter describes these methods.

Warm Boot

The warm boot is one of two software methods for resetting a 2325. It is analogous to the **CTL-ALT-DEL** key sequence for rebooting IBM-compatible PCs, and the same key sequence is used to force a warm boot on a 2325. This method of resetting a unit should be used first to attempt to bring it back to a usable state.

*Note: You do not need to press the **FN** key to activate the **DEL** function of the **BkSp** key.*

Since a warm boot can be attempted only from a unit that has been turned on, certain assumptions are made. For example, the rigorous hardware tests that are performed as part of the cold boot sequence are not all necessary. This means the unit restarts faster with a warm boot than with a cold boot.

During a warm boot, data written to the RAM drive (**D**), the flash drive (**C**), or an ATA flash card will remain intact. However, if an application is running on a unit before a warm boot, its state cannot be restored.

*Note: If you do not want end users to be able to reset the unit, scan the "Enable CTL-ALT-DEL Reboot Off" barcode in Appendix C "Barcodes" to disable the **CTL-ALT-DEL** reboot.*

Cold Boot

The second software method for resetting a 2325 is the cold boot. A cold boot should be used only if a warm boot is unsuccessful. Performing a cold boot is analogous to pressing the reset button on a PC or to turning the PC's power off and then back on.

To perform a cold boot on a 2325, first turn it off. Then press **[ALT] + [FN] + [Power]**, holding the first two keys down while pressing the third.

Release all three keys simultaneously, and the unit will reset.

Simply removing and inserting the battery pack will not force a cold boot, because the backup battery can provide minimal power to sustain the 2325's operating state. The exception to this is when the backup battery is drained of all power, a condition that you should not let happen.

When a cold boot is performed, all transient data is lost, along with the state of any application that was running on the unit. Data written to the RAM drive (**D**), the flash drive (**C**), or an ATA flash card will remain intact. If a cold boot happens because of a dead backup battery, data written to a RAM drive may not be maintained.

A cold boot begins with a retesting of the hardware and then follows with the DOS boot sequence. The unit reboots DOS under the same conditions you would expect from a desktop PC: Device drivers included in the CONFIG.SYS file and applications included in the AUTOEXEC.BAT file are automatically loaded as part of the boot process; any other programs that were loaded before the cold boot will not be reloaded automatically.

Safe Boot

During the DOS boot sequence, control is passed sequentially to the CONFIG.SYS files on drives **A**, **B**, and **C**. A similar process is followed for the AUTOEXEC.BAT files on each drive.

It is possible for a driver or application loading from the CONFIG.SYS or AUTOEXEC.BAT file on drive **C** to hang the system. A cold or warm boot of the unit will not directly correct the problem, because the troublesome program will be started again as part of the boot sequence. What is required is a method by which the CONFIG.SYS or AUTOEXEC.BAT file on drive **C** and the loading of the CFGDEV.SYS and DECODE.SYS drivers can be taken out of the normal boot sequence. DOS can help some, with the **CTL-C**, **F5**, and **F8** escape sequences.

The 2325 provides an alternative method that is less accessible to the end user. To bypass the CONFIG.SYS and AUTOEXEC.BAT files on drive **C**, reboot the unit (with either a cold or warm boot), and when the message "**Wait…"** appears on the display, immediately press the **ESC** and **DEL** keys at the same time. This causes alternative CONFIG.SYS and AUTOEXEC.BAT processing to take place on drives **A** and **B** without chaining into the files on drive **C**.

Note: *You do not need to press the **FN** key to activate the **DEL** function of the **BkSp** key.*

The unit indicates safe-boot mode by emitting a low tone followed by a higher-pitched tone. The flash drive (**C**) and the RAM drive (**D**) will be preserved, and the boot sequence will place the unit at the **C:**\> prompt.

Note: *If you do not hear the two tones indicating the safe-boot sequence, you probably did not press the **ESC** and **DEL** keys quickly enough. Reboot the 2325 and press the two keys simultaneously as soon as you see the "**Wait…**" message on the display.*

Hardware Reset

In the extremely rare situation where none of the rebooting methods is successful, you can use a reset mechanism that is located under the PC card slot cover. Touch a metal device (such as a paper clip) to the two metal contacts on the reset mechanism. This will cause the 2325 to begin a cold boot.

Note: Metal must touch metal before the 2325 will reset.

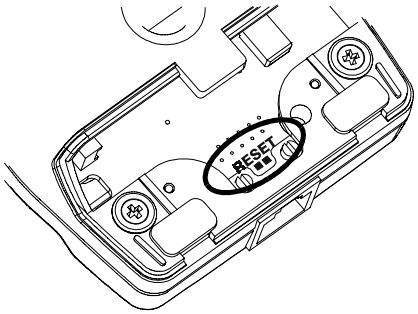

Figure 2-2 Location of the Hardware Reset Mechanism

Upon reset, you will need to set the date and time in the 2325. These DOS programs may run automatically after a Hardware Reset.

Using PC Cards

The 2325 has a slot for plugging in PC cards, and each unit is factory-equipped with PhoenixCARD Manager Plus PC card drivers. PC cards provide such features as network connectivity, modem connectivity, and wireless capability. Their primary purpose in the 2325 is to provide additional memory storage by functioning as a disk drive.

The 2325 holds one PC card at a time. If the 2325 has a radio card installed, the radio card will need to be removed before a different PC card can be inserted.

Opening the PC Card Slot Cover

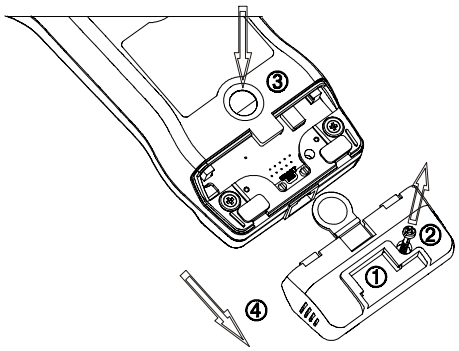

Figure 2-3 Removing the PC Card Slot Cover

1 Hand strap hook (hand strap not shown)

2 Locking screw

3 Round release button

4 Remove cover

The PC card slot is located near the bottom on the back of the 2325. The slot is protected by a cover.

Detach the elastic hand strap on the back of the 2325 by pulling its hook out of the holder near the base. If the slot cover is secured by a screw, loosen the screw. The locking screw is designed to remain connected to the 2325.

Then, while pressing the round button above the slot cover, slide the cover out and away from the 2325.

Note: The locking screw cannot be completely removed from the PC card slot cover. To keep the screw from catching on the unit, turn the 2325 face up when you pull the cover out.

Note: Turn the 2325 off before removing or inserting a PC card.

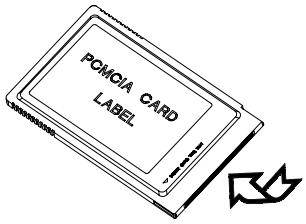

Figure 2-4 Typical PC Card

All PC cards have two rows of small sockets on one end. The cards also have face-up and face-down sides. The card manufacturer's label is usually on the face-up side.

Inserting a PC Card

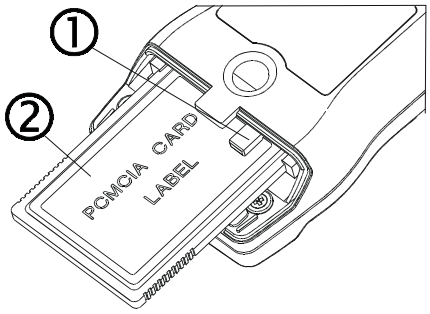

Figure 2-5 Inserting a PC Card

1 Ejector tab

2 PC card

With the 2325 face down and the PC card face up, insert the end of the card with the sockets into the card slot. There are two tracks inside the slot to help you guide the card.

Push the card firmly into the slot until the ejector tab slides out.

See section titled “Radio Card Antenna Connector” when installing or removing an RF card.

Note: Do not force the card into the slot. It should slide in easily. The PC card slot in the 2325 is designed so that you cannot insert a card upside down or backward. Make sure you put the end with the holes into the slot first. Then flip the card upside down and try to insert it again.

Replace the PC card slot cover and tighten the locking screw.

Card Recognition and Configuration

Once you have inserted the card in the slot, turn the unit on. The unit will try to recognize and configure the card.

If the unit responds with one beep when you turn it on, the PhoenixCARD Manager Plus drivers successfully recognized and configured the card. If the unit does not beep, the PC card drivers might not be loaded in the unit, or the beeper might be disabled.

Note: In some cases, drivers provided by a specific card’s vendor are responsible for configuring the card. If you are using one of these cards, you might receive no audio signals for card configuration. See the configuration instructions that came with the card.

Radio Card Antenna Connector

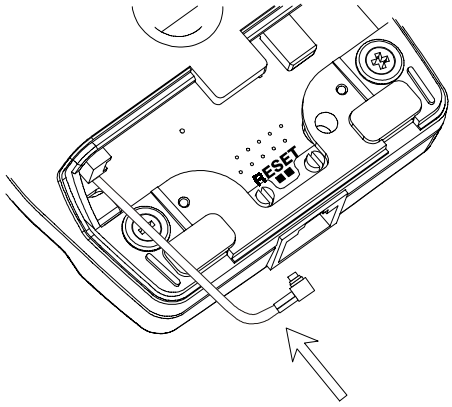

Figure 2-6 Radio Card Antenna Connector

Note: Turn the 2325 off before inserting or removing the radio PC card.

The antenna connector is inserted in the antenna port on the PCMCIA radio card when the card is inserted in the 2325. Units with radio cards require an antenna to connect to the RF network.

Radio Card Antenna Ports

Your radio PCMCIA card may have one or two antenna ports. Insert the antenna connector into the port identified by the arrows in the following figure.

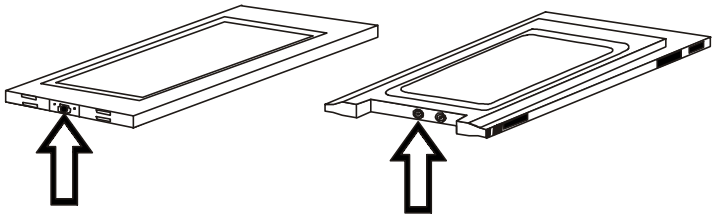

Figure 2-7 Radio Card Antenna Ports

Removing a PC Card

Note: If a radio card is to be removed, first disconnect the antenna connector from the radio card before pressing the Ejector Tab.

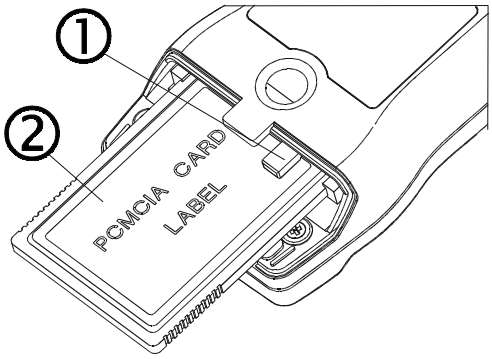

Figure 2-8 Removing a PC Card

1 Ejector tab

2 PC card

The Ejector Tab inside the PC card slot ejects the installed card. Push the end of the ejector tab into the 2325. As you do so, the PC card should slide partway out of the slot. Hold the card by the edges and pull it the rest of the way out.

The Serial Port

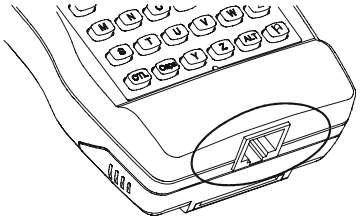

Figure 2-9 The Serial Port

The 2325 has a port for serial communications with a PC. The port is located at the base of the unit. Designated as COM1, it is a 10-pin telephone-style jack providing a standard RS-232 connection.

With a serial cable connected to it, the port allows communications with a host computer or any serial device, such as a printer or modem. The serial port also provides a connection for communications and battery recharging in the Single Dock and Four Slot Dock.

For the wiring configuration of the serial port, see Appendix A, “Connector Configurations.”

The Scanner Port

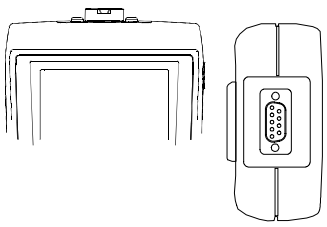

Figure 2-10 Port for Tethered Scanner

A 2325 without an integrated laser scanning module has a 9 pin scanner connector at the top of the unit to be used with a tethered scanner (not supplied by LXE). For the wiring configuration of the scanner port, see Appendix A “Connector Configurations.”

The Antenna

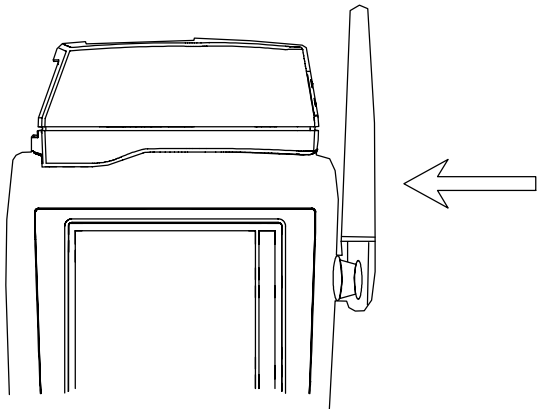

Figure 2-11 Antenna

Antennas are factory installed on the 2325s that will be used with radio PC cards. Not all 2325s with radios have an integrated laser scanner. For those 2325s that are not configured for radio, a rubber plug is inserted in the antenna opening.

The antenna can be rotated 90° toward the front of the unit and back up again. Do not force the antenna to move past the stopping point.

The Disk Drives

The 2325 contains four logical disk drives that provide storage for system files, applications, and data.

Drive A is a read-only drive. Its contents cannot be changed.**Drive B** is a read-only drive used to store system utilities and to initialize the boot process. Its contents cannot be changed.

Drive C is a flash disk drive that allows full read and write access. This drive contains DOS command files, PC card drivers, utilities, and executable files and associated files for applications. It may also contain additional CONFIG.SYS and AUTOEXEC.BAT files to configure your 2325 to run applications.

Drive D is a RAM disk drive. The RAM disk is used primarily for data storage. Programs that need to be loaded into memory and then quickly removed from memory can also be placed here. Drive **D** can also be used for scratch disk space or temporary files.

*Note: As with any RAM drive, data on drive D can be lost if the 2325 has a power failure caused by low batteries or a system reset. For truly secure data collection, store your data on drive **C** or on an ATA flash card.*

Additional Drives

Drive **E** exists only if your unit has been configured to use PC ATA flash cards. The PC card looks like a hard disk drive to the operating system. You can use drive **E** for safe and permanent storage of data.

Alternately, drive **E** could be a peer-to-peer or client-server network drive that is accessed through a wireless access point or Ethernet network card link.

Your unit may have other additional logical drives. These might be RAM drives, ATA flash cards, or network drives accessed via wireless access points.

Configuring the 2325

If your unit is not already configured for use when you get it, you can use the Configuration Utility to install applications and set options for barcode scanning. The Configuration Utility operates under Windows 3.1, Windows 95, and Windows NT. The Configuration Utility runs XFER automatically. For instructions on using the utility, see Chapter 4 “Configuration Utility.”

You can also use XFER at the DOS prompt or commercially available communications and file transfer software. See Chapter 5 “Using XFER.”

You can also scan barcodes with the 2325 to change 2325 configuration settings. Appendix C “Configuration Barcodes” has barcodes for many common settings.

Troubleshooting - Enable I 2 of 5

Problem

The 2325 configuration does not retain "Enable I 2 of 5" after power down. Note that this is an isolated incident and that the default 2325 with scanner configuration automatically enables Code 39, I 2 of 5, Codabar/Ames, Code 128, UPC-A and EAN/JAN.

Solution

Create a file containing the actual character string of the barcode used to set that particular parameter. The character strings are printed under the barcode in Appendix C – do not add the asterisks to the character string. Any number of setup strings can be used, one per line in the file used. After the file is created, copy the contents to the device PARAMS when the AUTOEXEC.BAT file is loaded.

For example, the setup string to enable I 2 of 5 is `$+$-151EE`.

1. Create an ASCII file – CUSTPARM.TXT – that contains the following line:

   ```
   $+$-151EE
   ```

2. Place the following line in the AUTOEXEC.BAT file and the command will be run each time the AUTOEXEC.BAT file is run:

   ```
   COPY CUSTPARM.TXT PARAMS
   ```

Transferring Files

To transfer data or program files, connect your 2325 to the host computer with any of the following accessories:

- Serial cable
- Single Dock
- Four Slot Dock

Your software application may have simple file-transfer options, or you can use the XFER utility.

When you use the Configuration Utility to transfer files (see chapter 4), the configuration utility runs XFER automatically for you. If you are not using the configuration utility, using XFER involves entering commands at the DOS command line on both the 2325 and the PC.

The XFER utility is loaded into the 2325 at the factory and placed on drive **B**. If the PATH statement has not been changed, you can run XFER from any drive on the 2325. However, before you can run XFER on your PC, you must install the Configuration Utility onto your hard drive.

The command line syntax for XFER is as follows:

```
XFER [/option1 [/option2] . . .] filename
```

You can use a slash (**/**) or a hyphen (**-**) to denote options, and you can use uppercase or lowercase letters for them. Options can be placed before or after the filename on the command line. A sample command line appears at the end of this section.

You can transfer a single file by using XFER with the Xmodem protocol (the default protocol) or transfer multiple files with the Zmodem protocol.

Basic options for Xmodem protocol are listed and described in the following table. The “Default” column indicates whether the option is used (On) or ignored (Off) if you do not include it in the command line. For options that have two or more possible values, the default value is given.

Option	What It Does	Default
filename	Identifies the file to be transferred or received.	None
#	Specifies the communication port to use. Replace the # symbol with the desired setting: 1 = COM1 2 = COM2	1
B#	Specifies the baud rate. Replace the # symbol with the desired setting: 2400 4800 9600 19200 38400 57600 115200	19200
D#	Specifies the number of seconds for XFER to wait for activity before canceling the transfer. Replace the # symbol with the desired number of seconds for the timeout delay. Acceptable values are 0 (no timeout) through 65,535.	60
H or ?	Displays help for the XFER command.	Off
O	Overwrites an existing file with a new file having the same name.	Off
R	Receives the specified file or files.	Off
T	Transmits the specified file or files.	On

Figure 2-12 XFER Options (Xmodem Protocol)

An Example

To transfer a file named MYFILE from a PC to a 2325 using Xmodem protocol, you could use the following lines.

On the PC: `xfer myfile.` This command causes the computer to send the specified file using XFER's default settings.

On the 2325: `xfer /r myfile`. This command causes the 2325 to receive the specified file transmitted from the PC.

Note: For more information about XFER, including Zmodem options, see Chapter 5 "Using XFER."

Advanced Power Management

The 2325 uses advanced power management (APM) to provide the longest battery life. Control of the APM features is provided in the PM.COM utility on drive B of each 2325.

This section provides additional information for getting the most power life out of a 2325 RF unit using the RangeLAN2 wireless LAN PC card.

Batteries

For RF units, LXE recommends the use of nickel metal-hydride (NiMH) batteries. In general, a 2325 with an RF card should be able to get through a normal 8-hour shift before the batteries need to be replaced or recharged.

Doze Mode

After 8 seconds without a keypress, scanner input, or other system activity, the 2325 goes into a power-saving state known as doze mode. To maximize battery life, especially in an RF environment, try to avoid accidental or unnecessary pressing of the keypad keys or triggers.

Auto-Off Timer

After a predetermined time without any system activity, the unit automatically shuts off. The default auto-off timeout is 5 minutes. To maximize battery life, you can set the timeout to a much shorter period.

Appendix C includes bar codes that provide auto-off settings as low as 20 seconds. You can also use the PM.COM utility to set the auto-off timer.

Backlight

Use of the display backlight severely affects battery life in the 2325. For RF applications, do not use the backlight unless it is absolutely necessary. If you do need to use it, you can change the display's auto-off timer to a setting lower than the default (15 seconds).

Appendix C includes bar codes that provide settings as low as 2 seconds for the backlight auto-off timer. You can also use the PM.COM utility to set the timeout.

Power Management at the Radio Card

To conserve battery life, the radio card has an inactivity sleep mode. The *sleep mode* is automatically engaged when a certain period has elapsed since the computer has sent or received data over the network. Once the card is asleep, it can be awoken by an access point attempting to send data to it. The time before sleeping is calculated by adding the `Inactivity_min` and `Inactivity_sec` parameter settings.

Note: Do not set an inactivity timeout on an RF 2325 being used as a master station. If the unit goes to sleep, you will lose all communication with your network.

The access point buffers packets that are to be sent to the 2325s. A dozing radio card will receive a sync message and wake-up list from the Access Point every 400 ms. The AP adds a `media access control (MAC)` address to the wake-up list each time a send attempt fails. (The access point buffers the packet and adds the MAC address of the 2325 to its wake-up list.)

If a 2325 detects that it is on the wake-up list, the radio card exits *doze mode* and enters *receive mode*. Once the radio card wakes up to receive the packet, it stays awake for all future sends until the inactivity timeout expires. This is why it is important to have the inactivity timeout as low as possible. The advantages of a higher timeout value is that the radio card will remain in Receive mode for longer periods of time; network throughput may be better because the unit will not have the delay of coming in and out of doze mode or of waiting for the wake-up list to see if there are any packets.

Generally, in the types of environments that the radio card will be used in, the user should strive for maximum power management. Most 2325 RF applications will not be expecting asynchronous network traffic, and it is doubtful that throughput differences due to power management will be noticeable with these types of applications. Always set the `Inactivity_min` parameter to 0, and set the `Inactivity_sec` parameter as low as possible (preferably to 1). Never set `Inactivity_sec` to 0, as that turns off the power management completely, and the card will always stay in receive mode.

Radio PC Card Configuration

Note: LXE will pre-install radio cards and drivers on 2325 RF units before delivery. These instructions are included for those users who may need to reinstall radio drivers and reconfigure radio parameters.

After installing the radio card, you must configure the 2325 to use the card. This is accomplished with the Configuration Utility. Use of the utility is covered in chapter 4 "The Configuration Utility." This section contains configuration information specific to the use of the Proxim RangeLAN2 wireless LAN PC card.

Getting Started

The 2325 Configuration Utility is provided with every unit, including the RF models. If you have not already installed it on your PC, install the utility now following the directions in Chapter 4 "The Configuration Utility."

The documentation set for RF includes an RF utilities disk. After installing the Configuration Utility, run the SETUP.EXE program on the utilities disk. Complete the setup procedure to install the drivers and other files required for RF operation onto your PC.

Note: See Chapter 4 "The Configuration Utility" for complete information on using the menus and dialog boxes in the Configuration Utility.

Installing ODI Drivers

The 2325 RF installation package includes *open data-link interface (ODI)* drivers for TCP/IP, IPX/SPX, NetWare Client, and custom installations.

- For TCP/IP, the package provides software from Novell. Novell's TCP/IP stack runs on top of the ODI driver.
- For NetWare Client, Novell's NETX.EXE and VLM.EXE programs use the IPX/SPX protocol stack, which runs on top of the ODI driver.

- These applications allow the user to run Novell client/server applications; to mount drives, printers, and other hardware; and to treat the 2325 RF as if it were a client on a Novell network.
- For other IPX/SPX solutions, the package provides software from Novell. Novell's IPX/SPX stack runs on top of the ODI driver.
- For other software implementations, you can customize one of the provided configurations.

ODI with TCP/IP

Complete the following steps to install the ODI drivers for TCP/IP:

1. Start the Configuration Utility by double-clicking on the icon in the Configuration Utility group on your PC.
2. From the Main Menu, select the Custom button.
3. An *Open dialog box* will appear (see screen displays in Chapter 4). Select the PX_TCPIP.CFG configuration file. In the next Open dialog box, select a program settings file. (If you do not have a specific one that you want to use, select DEFAULT.PRS.)

   The following files are included automatically as part of the NetWare Client download:

   LSL.COM - Link support layer driver

   NET.CFG - ODI configuration file

   RL2PCM.COM - Proxim RF ODI Driver

   TCPIP.EXE - TCP/IP protocol driver

   You need to select your 2325 application and related files.
4. Select the File Configuration button in the Custom Configuration menu.
5. Select the Add button, and use the *File Selection dialog box* (see screen displays in Chapter 4) to include the main application and additional files in your custom installation. Be sure to turn on the Main Application switch for the one you want the 2325 to use.
6. Select the Next button at the bottom of the File Configuration window.
7. In the second File Configuration window, make sure the Vendor Specific option is selected. This option identifies which Phoenix drivers to download.

Note: The I/O-card drivers are not compatible with Proxim's client driver. Do not select the I/O Cards options when using RF.

8. Select the More button to verify that the DOS files you need are included in the download. After viewing the file list and making any necessary changes, return to the File Configuration window.
9. Select the NEXT button to move to the third File Configuration window.
10. If you want to include commands to be executed in the AUTOEXEC.BAT file, select the AUTOEXEC.BAT button. Enter the commands, and save the revised file before exiting from the text editor.

    Note: Verify that the drive and directories of any drivers loaded in the AUTOEXEC.BAT file are correct. The default PX_TCPIP.CFG file assumes these drivers will go to a specific location on the 2325. If you change the destination directory on the 2325 for these files, be sure to change them here, too. The file that you selected as the main application will automatically be appended to the AUTOEXEC.BAT file before it is downloaded to the 2325.

11. If you want to make changes to the CONFIG.SYS file, select the CONFIG.SYS button.

    Note: Certain default configuration parameters and card and socket services drivers will automatically be included at the beginning of the CONFIG.SYS file before it is downloaded to the 2325.

12. Select the Text File button and open the NET.CFG file in the ...\RF\PROXIM directory.
13. Under the heading `Protocol TCPIP`, replace the Xs with the appropriate IP address, IP router, and IP netmask numbers.
14. Save the NET.CFG file before exiting from the text editor.
15. Select the Done button in the File Configuration window to return to the Custom Configuration menu.
16. Modify your program settings and communications settings, if necessary.
17. Select the Download button in the Custom Configuration menu to install the custom TCP/IP configuration on the 2325.
18. Reboot the 2325 when the download is completed.

ODI with NetWare Client

Complete the following steps to install the ODI drivers for NetWare Client:

1. Start the Configuration Utility by double-clicking on the icon in the Configuration Utility group on your PC.
2. From the Main Menu, select the Custom button.
3. An *Open dialog box* will appear (see screen displays in Chapter 4). Select the PX_VLM.CFG configuration file. In the next Open dialog box, select a program settings file. (If you do not have a specific one that you want to use, select DEFAULT.PRS.)

   The following files are included automatically as part of the Novell TCP/IP download:

   IPXODI.COM - IPZ/SPX driver

   LSL.COM - Link support layer driver

   NET.CFG - ODI configuration file

   RL2PCM.COM - Proxim RF ODI Driver

   VLM.EXE - Virtual loadable module manager

   *.VLM - Virtual loadable modules
4. Select the File Configuration button in the Custom Configuration menu.
5. Select the Add button, and use the *File Selection dialog box* (see screen displays in Chapter 4) to include the main application and additional files in your custom installation. Be sure to turn on the Main Application switch for the one you want the 2325 to use.
6. Select the Next button at the bottom of the File Configuration window.
7. In the second File Configuration window, make sure the Vendor Specific option is selected. This option identifies which Phoenix drivers to download.

   Note: The I/O-card drivers are not compatible with Proxim's client driver. Do not select the I/O Cards options when using RF.
8. Select the More button to verify that the DOS files you need are included in the download. After viewing the file list and making any necessary changes, return to the File Configuration window.

9. Select the NEXT button to move to the third File Configuration window.

10. If you want to include commands to be executed in the AUTOEXEC.BAT file, select the AUTOEXEC.BAT button. Enter the commands, and save the revised file before exiting from the text editor.

    Note: Verify that the drive and directories of any drivers loaded in the AUTOEXEC.BAT file are correct. The default PX_VLM.CFG file assumes these drivers will go to a specific location on the 2325. If you change the destination directory on the 2325 for these files, be sure to change them here, too. The file that you selected as the main application will automatically be appended to the AUTOEXEC.BAT file before it is downloaded to the 2325.

11. If you want to make changes to the CONFIG.SYS file, select the CONFIG.SYS button.

    Note: Certain default configuration parameters and card and socket services drivers will automatically be included at the beginning of the CONFIG.SYS file before it is downloaded to the 2325.

12. Select the Text File button and open the NET.CFG file in the ...\RF\PROXIM directory.

13. In the `NetWare DOS Requester` section, assign whatever drive letter you want to FIRST NETWORK DRIVE. Set PREFERRED SERVER to the name of the network to which you will be connecting.

14. Save the NET.CFG file before exiting from the text editor.

15. Select the Done button in the File Configuration window to return to the Custom Configuration menu.

16. Modify your program settings and communications settings, if necessary.

17. Select the Download button in the Custom Configuration menu to install the NetWare Client configuration on the 2325.

18. Reboot the 2325 when the download is completed.

ODI With IPX/SPX

The IPX/SPX configuration downloads the same adapter and protocol drivers as the NetWare Client configuration. It does not download the VLM files.

Complete the following steps to install the ODI drivers for IPX/SPX:

1. Start the Configuration Utility by double-clicking on the icon in the Configuration Utility group on your PC.
2. From the Main Menu, select the Custom button.
3. An *Open dialog box* will appear (see screen displays in Chapter 4). Select the PX_IPX.CFG configuration file. In the next Open dialog box, select a program settings file. (If you do not have a specific one that you want to use, select DEFAULT.PRS.)

   The following files are included automatically as part of the IPX/SPX download:

   IPXODI.COM - IPX/SPX driver

   LSL.COM - Link support layer driver

   NET.CFG - ODI configuration file

   RL2PCM.COM - Proxim RF ODI Driver
4. Select the File Configuration button in the Custom Configuration menu.
5. Select the Add button, and use the *File Selection dialog box* (see screen displays in Chapter 4) to include the main application and additional files in your custom installation. Be sure to turn on the Main Application switch for the one you want the 2325 to use.
6. Select the Next button at the bottom of the File Configuration window.
7. In the second File Configuration window, make sure the Vendor Specific option is selected. This option identifies which Phoenix drivers to download.

   Note: The I/O-card drivers are not compatible with Proxim's client driver. Do not select the I/O Cards options when using RF.
8. Select the More button to verify that the DOS files you need are included in the download. After viewing the file list and making any necessary changes, return to the File Configuration window.
9. Select the NEXT button to move to the third File Configuration window.

10. If you want to include commands to be executed in the AUTOEXEC.BAT file, select the AUTOEXEC.BAT button. Enter the commands, and save the revised file before exiting from the text editor.

    Note: Verify that the drive and directories of any drivers loaded in the AUTOEXEC.BAT file are correct. The default PX_IPX.CFG file assumes these drivers will go to a specific location on the 2325. If you change the destination directory on the 2325 for these files, be sure to change them here, too. The file that you selected as the main application will automatically be appended to the AUTOEXEC.BAT file before it is downloaded to the 2325.

11. If you want to make changes to the CONFIG.SYS file, select the CONFIG.SYS button.

    Note: Certain default configuration parameters and card and socket services drivers will automatically be included at the beginning of the CONFIG.SYS file before it is downloaded to the 2325.

12. Select the Done button in the File Configuration window to return to the Custom Configuration menu.
13. Modify your program settings and communications settings, if necessary.
14. Select the Download button in the Custom Configuration menu to install the IPX/SPX protocol stack on the 2325.
15. Reboot the 2325 when the download is completed.

Installing NDIS Drivers

The NDIS driver is the low-level protocol that runs the wireless LAN PC card.

- If you wish to use another version of TCP/IP besides Novell TCP/IP over ODI, use the information in this section to ensure that the implementation will work correctly on the 2325.
- For other software implementations, you can use various configuration files to configure a generic NDIS implementation on the 2325.

NDIS for TCP/IP

Normally, the IP stack talks to a packet driver, which accesses the physical hardware. Packet drivers have not been developed at this time for the RangeLAN2 PC card. To fool the IP stack into thinking that a packet driver is installed, a driver known as a *shim* can be used.

In this implementation, the NDIS driver talks directly to the RF hardware. An NDIS–to–packet driver shim sits above the NDIS driver and translates calls to the packet driver interface into calls that the NDIS driver can understand. The IP stack will make calls to the packet driver shim as if it were talking to the hardware directly. The IP stack has no knowledge of the NDIS driver.

Using the NDIS–to–packet driver shim allows many third-party TCP/IP implementations to work on the 2325.

Complete the following steps to install the packet driver shim:

1. Start the Configuration Utility by double-clicking on the icon in the Configuration Utility group on your PC.
2. From the Main Menu, select the Custom button.
3. An *Open dialog box* will appear (see screen displays in Chapter 4). Select the PX_PKDRV.CFG configuration file. In the next Open dialog box, select a program settings file. (If you do not have a specific one that you want to use, select DEFAULT.PRS.)

   The following files are included automatically as part of the NDIS-to-packet download:

   DIS_PKT.DOS - NDIS-to-packet driver shim driver

   PROTOCOL.2 - Sample NDIS configuration file

   RL2PCM.COM - Proxim RF ODI Driver

The PROTOCOL.2 file will be renamed PROTOCOL.INI when it is saved on the 2325 drive.

4. Select the File Configuration button in the Custom Configuration menu.

5. Select the Add button, and use the *File Selection dialog box* (see screen displays in Chapter 4) to include the main application and additional files in your custom installation. This should include the TCP/IP package you want to load, as well as a protocol manager (e.g., PROTMAN.SYS). Be sure to turn on the Main Application switch for the application you want the 2325 to use.

6. Select the Next button at the bottom of the File Configuration window.

7. In the second File Configuration window, make sure the Vendor Specific option is selected. This option identifies which Phoenix drivers to download.

   Note: The I/O-card drivers are not compatible with Proxim's client driver. Do not select the I/O Cards options when using RF.

8. Select the More button to verify that the DOS files you need are included in the download. After viewing the file list and making any necessary changes, return to the File Configuration window.

9. Select the NEXT button to move to the third File Configuration window.

10. If you want to include commands to be executed in the AUTOEXEC.BAT file, select the AUTOEXEC.BAT button. Enter the commands, and save the revised file before exiting from the text editor.

    Note: Verify that the drive and directories of any drivers loaded in the AUTOEXEC.BAT file are correct. The default PX_PKDRV.CFG file assumes these drivers will go to a specific location on the 2325. If you change the destination directory on the 2325 for these files, be sure to change them here, too. The file that you selected as the main application will automatically be appended to the AUTOEXEC.BAT file before it is downloaded to the 2325.

11. Select the CONFIG.SYS button, and verify that the drives and directories specified for any device drivers in the CONFIG.SYS file are correct. Be sure to include a line to load the protocol manager (e.g., `device=c:\net\protmen.sys /i:c:\net`). By default, NDIS TCP/IP drivers and programs are assumed to be in

the C:\NET directory on the 2325. If you want to put them somewhere else, change the directory paths here. Add any additional drivers that you need to load for your configuration at this time. Be sure to also change the directory specified by the `/I` option of the PROTMAN.SYS device driver in the CONFIG.SYS file.

12. If you need to modify the PROTOCOL.2 file (or any other text file), select the Text File button and open the desired file. (PROTOCOL.2 is located in the ...\RF\PROXIM directory.) Be sure to save the edited file before exiting from the text editor.
13. Select the Done button in the File Configuration window to return to the Custom Configuration menu.
14. Modify your program settings and communications settings, if necessary.
15. Select the Download button in the Custom Configuration menu to install the drivers and applications on the 2325.
16. Reboot the 2325 when the download is completed.

Proxim Configuration Settings

Link Support Layer

```
Link Support
  MEMPOOL 4096
  BUFFERS 8 1500
```

TCPIP Protocol

Substitute the appropriate IP addresses in order for your network to function properly.

```
Protocol TCPIP
  IP_Address XXX.XXX.XXX.XXX
  IP_Router XXX.XXX.XXX.XXX
  IP_Netmask XXX.XXX.XXX.XXX
```

Install Proxim RangeLAN2 Drivers

Socket	A : DO NOT CHANGE - A is the only socket
Initialize_365	N : DO NOT CHANGE - not an Intel chipset
Int	3 : 3, 5, 6, or 15 are available
Mem #1	C100 : Highly Recommended - C100,C200,C300,C400 only options
Port	300 : Highly Recommended - 300 is available
Inactivity_Min	0 : Highly Recommended - lengthens battery life (0-59)
Inactivity_Sec	1 : Highly Recommended - lengthens battery life (0-59)
Sniff_Time	0 : Highly Recommended - lengthens battery life
Domain	0 : 0-15
Station_Type	0 : 0,1, or 2
Peer_To_Peer	N : Y, N
Roam_Config	1 : 0,1, or 2
Mac_Optimize	1 : 0,1
Channel	1 : 1-15
SubChannel	1 : 1-15
Frame	Network dependent

```
Link Driver RL2PCM
        Socket          A
        Initialize_365  N
        Int             3
        Mem #1          C100
        Port            300
        Inactivity_Min  0
        Inactivity_Sec  1
        Sniff_Time      0
        Domain          0
        Station_Type    0
        Peer_To_Peer    N
        Roam_Config     1
        Mac_Optimize    1
        Channel         1
        SubChannel      1
        Frame           Ethernet_II
        Frame           Ethernet_802.2
        Frame           Ethernet_802.3
```


DOS Configuration Parameters

Configuration parameters for DOS can be contained in the NET.CFG or PROTOCOL.INI file. You can use an ASCII text editor to add or modify parameters in those files, or you can edit them using the Text File button in the third File Configuration window of the Configuration Utility. The modifiable parameters are described in the following table.

Note: Hex values are indicated with a leading 0x. NET.CFG values do not use the 0x; PROTOCOL.INI values require the 0x.

Keyword	Description
Int	Sets the interrupt (IRQ) line to be used. This must be set to 3, which is the only free interrupt.
Port	Sets the I/O port address. The default is 0x300.
Mem#1 (ODI) Memory_address (NDIS)	Sets the resource memory location (0xC000 to 0xE800). Upper memory blocks from 0xA000 to 0xCFFF are used by 2325 system software. Memory from 0xD000 to 0xDFFF is reserved for PC card client drivers. Since card services use 0xD000, only

Keyword	Description
	0xD400, 0xD800, and 0xDC00 are available for the RF driver. The Proxim driver requires 0x4000 bytes (16 KB) for the memory address.
Domain	Sets the network domain. It can be any number from 0 through 15 and must match the domain of the server or access point to which you want to connect.
Station_type	Sets the status of the RangeLAN2 PC card as a master (2), alternate master (1), or nonmaster (0) station.
Frame Ethernet_802.3 (ODI only)	Indicates that the RangeLAN2 PC card sends Ethernet packets that follow the 802.3 specification.
Socket	Sets the PCMCIA socket (A, B, C, or D) that has the PC card installed. The 2325 always uses socket A for PC cards.
Initialize_365	Determines whether to initialize the Intel 82365SL PCMCIA controller chip. Because the 2325 does not contain that chip, this parameter must be set to N.
Inactivity_min	Sets the number of minutes of inactivity before the PC card goes to sleep. Valid settings are 0 through 20. To maximize battery life, set this to 0.
Inactivity_sec	Sets the number of seconds of inactivity before the PC card goes to sleep. Valid settings are 0 through 55 (values above 5 are rounded to the nearest multiple of 5). To maximize battery life, set this as low as possible, preferably to 1.
Channel	Sets the channel to be used when the RangeLAN2 PC card is acting as the master. Valid settings are 1 through 15.
Subchannel	Sets the subchannel to be used when the RangeLAN2 PC card is acting as the master. Valid settings are 1 through 15.
Master_name	Sets the name of the RangeLAN2 PC card when it is acting as the master. The name may be up to 11 characters and must not contain any spaces. The

Keyword	Description
	default master name is MASTER.
Mac_optimize	Optimizes the RangeLAN2 PC card for the number of concurrent modes. Valid settings are 0 (light) or 1 (normal).
Roam_config	Sets the roaming speed. Valid settings are 0 (slow), 1 (normal) or 2 (fast).
Peer_to_peer	Sets the ability of the RangeLAN2 PC card to talk to other RangeLAN2 peers. Valid settings are 0 (off) or 1 (on).

Setting the RangeLAN2 Security ID

As an added security measure, the RangeLAN2 wireless LAN allows you to set a security ID for each RangeLAN2 card installed on a network. All cards (in access points and target 2325s) must have matching security IDs in order to communicate.

To set the security ID, choose the Configuration button from the Windows tool and the Set Security ID button from within the Test/Utilities button in the RL2SETUP.EXE program.

To change the security ID to the default settings, leave the Security ID field blank and select OK.

Lucent Configuration Settings

Link Support Layer

Mempool 4096 : required for Novell LSL and TCP/IP

Buffers 8 1500 : required to avoid "Network jammed" message

```
Link Support
   MEMPOOL 4096
   BUFFERS 8 1500
```


TCPIP Protocol

Substitute the appropriate IP addresses in order for your network to function properly.

```
Protocol TCPIP
   IP_Address XXX.XXX.XXX.XXX
   IP_Router XXX.XXX.XXX.XXX
   IP_Netmask XXX.XXX.XXX.XXX
```

Install Lucent WaveLAN II Drivers

Change the Lucent (LXE's System 6500) default radio parameters by editing the NET.CFG file in the PCTCP directory. This can be done with any ASCII text editor. The NET.CFG file is the configuration file used by the radio card's ODI driver. The NET.CFG file determines the wireless network name, the workstation name and other information regarding the wireless system.

LXE's terminal emulation (TE) programs also allow you to change System 6500 radio parameters using the TE Configuration Utility. Please refer to the specific terminal emulation reference guide for instruction.

NET.CFG File and Parameters

Note: Alphabetic parameter values must be in uppercase.

An **example** NET.CFG file:

```
Link Driver WVLAN43
   FRAME ETHERNET_II
    WaveLAN_Network_Name ANY
    Station_Name station_name
    AP_Density  3
    Transmit_Rate   3
    PortType  1
    Medium_Reservation  2347
    Card_Power_Management = N
    Maximum_Sleep_Duration = 100
    Receive_All_Multicasts = Y
```

The following is a list of parameters that can be modified in the NET.CFG file. For additional information about the parameters in this file see the WVLAN43.CFG file located in the PCTCP directory.

WaveLAN_Network_Name

Identifies the WaveLAN network the station will connect to.

Valid values: 0 to 32 string of printable uppercase characters.

Default: ANY

Note: Setting this value to ANY will enable the station to connect to any IEEE 802.11 network.

Note: The string for WaveLAN_Network_Name is case-sensitive. The Lucent DOS ODI driver requires the use of only UPPERCASE characters. If you have configured the Lucent Access Points with lower-case names you will need to change your Lucent Access Point WaveLAN_Network_Name parameter to UPPERCASE characters for proper operation.

Station_Name

Identifies the stations on the network. This parameter is used when performing diagnostic tests.

Valid values: 0 to 32 string of printable characters.

Default: station_name

AP_Density

Controls the roaming sensitivity of your computer. This parameter must be set according to the settings of the Lucent access points.

Valid values: 1=Low
2=Medium
3=High

Default: 3

Transmit_Rate

Controls the data rate the Lucent card will use. Supported rates depend on the card. If the card does not support the selected rate, the default value of 3 is selected automatically.

Valid values: 1=Fixed Low
2=Fixed Standard
3=Auto Rate Select (High)
4=Fixed Medium
5=Fixed High
6=Auto Rate Select (Standard)
7=Auto Rate Select (Medium)

Default: 3

PortType

Defines the connection control characteristics.

Valid values: 1=Infrastructure mode (ESS) 'normal' network operation in environments that include Lucent access points
3=AdHoc Demo mode

Default: 1

Medium_Reservation

Enables RTS/CTS communications. Sets the frame length threshold that determines when the station should start using RTS/CTS.

Valid values: 0-2347

Default: 2347

Note: The use of Medium Reservation is recommended in network environments where the density of the Lucent stations and Lucent access points is very low, and where there is poor network performance due to excessive frame collisions at the Lucent access points.

Card_Power_Management

Configures whether the Lucent radio card will perform power management.

Valid values: Y=Yes or N=No
Default: N

Maximum_Sleep_Duration

Configures the maximum amount of time the radio will stay in Sleep mode.

Valid values: 1-65535
Default: 100 (10 seconds)

Receive_All_Multicasts

Configures whether this station will receive Multicast packets.

Valid values: Y=Yes or N=No
Default: Y

RF Throughput, Performance and Troubleshooting

Because of the complicated nature of wireless LAN technology, problems occasionally arise. This section provides general information about performance and addresses some problems that might arise during setup or use of a wireless network with RF units. This should be your first resource in case of trouble.

Power Management at the Proxim RangeLAN2 Access Point

Proper setup of the access point (AP) is essential to RF power management. Even with the 2325 set up for maximum power savings, the batteries can become drained quickly if the AP is not configured properly.

MU Access Control

For environments in which multiple RF networks overlap, you can use an authorization table to prevent RangeLAN2 APs from accessing RF cards on other networks. This list contains media access control (MAC) addresses of mobile units that are allowed to associate with the AP.

See the AP user's guide for more information about MAC addresses and for information about the authorization table.

Message Filtering

Network packets include a protocol type (IPX, IP, ARP broadcast, NetBIOS, etc.) in the header field. By filtering out unwanted protocol messages, you can prevent the AP from sending these packets to the 2325. This will reduce the amount of times the radio cards have to wake up out of doze mode to service incoming packets.

It can be especially important to filter out broadcast messages. These types of packets, which are generically addressed to all computers on a system, may force the 2325 to operate continuously in full receive mode, even when the data is not relevant to the 2325. If the 2325 does not turn off automatically after the preset timeout, it is an indication that the radio card is receiving broadcast messages and is unable to go to sleep.

The Proxim AP user interface for filtering packets allows you to select the type of packets that will be filtered by selecting from a list of

possible types. The best method with the Proxim RangeLAN2 access point is to turn on filtering for every packet type that you know you won't use. For example, if the access point is hooked up to a TCP/IP network, you would set TCP/IP to Not Filtering and all other protocols to Filtering. In a NetBEUI environment, turn off the Filter NetBEUI option, and turn filtering on for all the rest of the protocols. ARP Broadcast packets should always be turned off, unless your application requires them, to prevent broadcast messages from waking up the 2325.

Note: For more information on packet filtering, see the RangeLAN2 access point manual or your network administrator.

Site Survey

Many companies have an existing Ethernet or wired LAN infrastructure and want to be able to extend that capability to wireless nodes. This is accomplished by attaching an access point to the wired LAN, allowing the wireless clients to access the network resources.

2325s, like other 386-compatible DOS computers, can be connected to networks. With RF models, radio signals between the 2325s and the AP replace the wires connecting the nodes to the network.

A site survey is an important part of setting up a wireless network. Contact your LXE representative.

For most office environments, a site survey is not necessary. For large, industrial environments requiring multiple APs, however, you should perform a site survey before installing a RangeLAN2 network system. Run Proxim's RL2SETUP.EXE program on a laptop using a RangeLAN2 card.

The purpose of a site survey is to calculate the most effective number of access points at a site and the best placement and positioning of antennas for optimal reception of radio signals. This is done by identifying areas where transmission failures occur. As each site is unique, the surveyor needs to consider the exact conditions as they will appear in the final installation. In addition to such climate factors as moisture, excessive heat, and dust, a site survey can also be affected by physical obstructions and electromagnetic interference. Also important is the identification of potential cabling, connector, or power problems.

Throughput and Performance

The bandwidth on a radio network is constant for a given network. Therefore, the more active RF units using the same frequency- hopping pattern, the slower the throughput of any one unit. If this is a problem, you should install additional access points.

Radio signals may reflect off some obstacles and be absorbed by others. An RF unit with an unobstructed line of sight to the access point antenna can successfully transmit and receive signals at distances up to 1000 feet. In an environment that includes such obstructions as cubicle walls typically used in modern offices, the range is reduced significantly, with a maximum distance of 500 feet. Where signals must penetrate office walls, the maximum distance may be only 300 feet.

Many other factors also affect performance of wireless LANs, including the following:

- Transmitter power
- Receiver sensitivity
- Interference caused by noise, receiver desensitization, spurious responses, and intermodulation
- Shadowing
- Multipath fading
- Consumer products in use in the coverage area

Some of these factors can be sensed during a site survey and be avoided.

Operational Problems

This section lists solutions to problems that can occur with an RF unit.

The drivers won't load, or the unit locks up when the drivers load.

Be sure the RangeLAN2 PC card is correctly installed in the radio card slot before turning the unit on. Do not remove or insert any PC card while the 2325 is on.

The 2325 seems to lock up for four or five seconds after it is turned on.

Every time a 2325 is turned on, it must initialize the PC card. Wireless LAN PC cards commonly take four or five seconds to initialize. After the card is initialized, the unit should function normally.

The 2325 cannot communicate with a NetWare server.

The 2325 and the server may be using different frame types. Make sure that the frame type in your NET.CFG file matches the server's frame type.

The 2325 cannot communicate with another machine on the network.

The 2325 may not have the same domain and security ID as the other machine.

The 2325 does not shut down properly when I remove the PC card or take out the batteries.

Do not remove a PC card or the batteries while the 2325 is on or immediately after turning it off. When you turn the unit off, it suspends the RF driver, a process that can take one or two seconds. If you remove the PC card or the batteries before the driver is suspended, the unit may be left in an unstable state and may need to be reset.

The 2325 never turns itself off automatically, even when the time-out value is correctly set.

The radio may be receiving broadcast messages from the access point. See "Power Management at the RangeLAN2 Access Point," for information on filtering messages.

Problems with DOS Drivers

Some problems may occur in the DOS environment. Many problems can be caused by inappropriate memory, I/O, or IRQ settings for the 2325. If changing those settings in the NET.CFG or PROTOCOL.INI file doesn't solve the problem, consult the following list of symptoms to identify other possible causes. Contact your systems administrator if you need additional help.

NDIS driver does not install or does not work

- Domain, memory address, I/O address hex values in PROTOCOL.INI file not specified with leading 0x.
- Memory range not reserved
- Incompatible protocol manager and stack
- Improper linking in PROTOCOL.INI file
- Memory, I/O, or IRQ setup conflicts with other installed software or hardware

ODI driver does not install or does not work

- Memory range not reserved
- Incompatible protocol manager and stack
- Improper linking in NET.CFG file
- Memory, I/O, or IRQ setup conflicts with other installed software and hardware

TCP/IP fails

- Incorrect IP/subnet address
- Incorrect domain; check for MU association

Nothing happens after installation of the network software (no login, cannot find server, no TCP connection)

- Incompatible firmware and driver versions
- Memory, I/O, or IRQ setup conflicts with other installed software or hardware
- MU is out of range

- All cards must have matching security IDs to communicate

Slow or erratic performance

- Out of communication range
- Faulty antenna, antenna connector, or cable

Driver does not install, or driver hangs during installation

- Incompatible firmware and driver versions
- Memory range not reserved
- Memory range does not match setting in NET.CFG or PROTOCOL.INI file
- Memory range is too small (use I/O mode if memory is restricted)
- Memory, I/O, or IRQ setup conflicts with other installed software or hardware

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Chapter 3
Software Configuration

Introduction

This chapter details the default contents of the disk drives and the organization of system software on the 2325. It also includes descriptions of two standard software configurations.

BIOS and DOS

The 2325 uses a modified version of General Software's BIOS with Datalight's ROM-DOS. Both products are burned into system flash in a single 256K image. The A drive is included in the image, physically addressed just below the BIOS image.

ROM-DOS uses the Datalight command.com processor. This processor is fully Microsoft 6.2 compatible, except that it occupies about half the space in memory. In addition, drive C contains Datalight DOS files in a DOS subdirectory.

PC Card and RF Networking Software

PC card device drivers and utilities as well as RF networking solutions can be installed to drive C (the flash drive) or drive D (the RAM drive). You can use the Configuration Utility to download the necessary files to the 2325.

- Default IRQ for PC card is 7.
- Default PC card COM port is COM 2.

Disk Drives and Files

The 2325 has the following drive structure:

Drive A is a read-only flash drive. The contents of this drive cannot be changed.

Drive B is a read-only flash drive that you can update by using the core-update program, COREXFER.EXE, (loaded on the PC by the Configuration Utility) from a host machine. (Normal operation will not require updating of this drive.)

Drive C is a resident flash disk drive that is accessed with the flashdsk.sys device driver. You can use this drive to store applications and data.

Drive D is a RAM disk accessed with the vdisk.sys device driver. This drive can be used to store applications as well as data. However, you should take great care in selecting files for this drive. As with any RAM drive, its contents will be lost if power is removed.

Additional drives are mapped to ATA flash PC cards or to network drives via radio frequency (RF).

This organization provides an easy-to-use, extensible system that allows a high degree of performance, usability, and customization. The following sections more fully describe the contents and intended uses of each of the 2325's drives.

Drive A

Drive A is a disk image that is located in flash along with the BIOS and ROM-DOS. A read-only drive, it is intended to remain secure throughout the life of the unit. Drive A contains the following files:

AUTOEXEC.BAT	the first file in the startup sequence
CONFIG.SAF	the first file in the safe-boot sequence
CONFIG.SYS	the first file in the boot sequence
REV.COM	the utility that reports the firmware revision

The CONFIG.SYS and AUTOEXEC.BAT files contain only basic commands that the unit needs to run correctly. Both files chain to their respective counterparts on the B drive, as described in the next section.

The config.saf file is used in the safe-boot sequence.

```
REM ************************************
REM Initial CONFIG.SYS file for
REM starting the system.
REM ************************************

NEWFILE = B:\CONFIG.SYS
```

Figure 3-1 CONFIG.SYS File on Drive A

```
@echo off
REM ***************************************
REM Initial AUTOEXEC.BAT file for
REM starting the system.
REM ***************************************
VER
PATH=A:\
B:\AUTOEXEC.BAT
```

Figure 3-2 AUTOEXEC.BAT File on Drive A

```
REM ********************************
REM Initial CONFIG.SYS for safe boot.
REM ********************************
NEWFILE = B:\CONFIG.SAF
```

Figure 3-3 CONFIG.SAF File on Drive A

Drive B

Drive B is a disk image that is located in flash. A read-only drive, it is intended to be used to store mandatory utilities and initialize the boot process. During normal use this drive will not be updated. Drive B has no subdirectories.

See Chapter 6 “Commands” for DOS and ROM-DOS command syntax.

AUTOEXEC.BAT	the second file in the startup sequence.
CFGDEV.SYS	the system-parameter-configuration device driver.
CFGIO.EXE	the utility for loading fonts and keypad layouts.
COMIO.COM	the utility for redirecting input and output to the serial port.
COMMAND.COM	the DOS shell.
CONFIG.SAF	the second file in the safe-boot sequence.
CONFIG.SYS	the second file in the boot sequence.
COREUPD.COM	the utility that updates the firmware image.
DECODE.SYS	the bar-code-decoding device driver.
FLASHDSK.SYS	the resident flash disk device driver.
FORMAT.COM	the disk-reformatting utility.
FUNCTEST.COM	the functional test for system components.
HIMEM.SYS	the device driver for accessing extended memory.
LD.BAT	the batch file for `response.bat` processing.
LOCK.COM	the utility for locking or unlocking the resident flash disk and RAM disk.

ORGANIZE.COM	the utility for reorganizing flash disk data.
PM.COM	the power-management utility.
REV.COM	the utility that reports the firmware version.
UMBLINK.EXE	the device driver for accessing upper memory blocks.
VDISK.SYS	the RAM-disk device driver.
XFER.EXE	the serial-transfer utility.

The CONFIG.SYS file will load the FLASHDSK.SYS driver to create the `C` drive and the VDISK.SYS driver to create the `D` drive. It will then load DECODE.SYS and CFGDEV.SYS before chaining to its counterpart on drive `C`. The AUTOEXEC.BAT file will chain to its counterpart on drive `C`, except during a safe boot.

The purpose of the CONFIG.SAF file is to provide a minimal boot configuration that preserves the flash and RAM drives. When the safe-boot sequence is initiated, the CONFIG.SAF file is processed instead of the CONFIG.SYS file. This prevents chaining into the drive-`C` initialization files by omitting the `NEWFILE = C:\CONFIG.SYS` command. It also eliminates the loading of the DECODE.SYS and CFGDEV.SYS drivers.

```
REM ****************************************
REM Standard CONFIG.SYS for building system.
REM ****************************************

REM ***************************
REM Create flash and RAM drives
REM ***************************
DEVICE = B:\FLASHDSK.SYS 4096
DEVICE = B:=VDISK.SYS 4096 /e

REM ********************************
REM Load decode/configuration drivers
REM ********************************
DEVICE = B:\DECODE.SYS
DEVICE = B:\CFGDEV.SYS
NEWFILE = C:\CONFIG.SYS
```

Figure 3-4 CONFIG.SYS File on Drive B

```
@echo off
REM **********************************
REM Standard AUTOEXEC.BAT for
REM starting system.
REM **********************************
PATH=%PATH%;B:\
C:
IF EXIST A:\CONFIG.SAF
IF EXIST C:\AUTOEXEC.BAT C:\AUTOEXEC.BAT
```

Figure 3-5 AUTOEXEC.BAT File on Drive B

```
REM **********************************
REM Standard CONFIG.SYS for safe boot.
REM **********************************

REM ****************************
REM Recover flash and RAM drives
REM ****************************
DEVICE = B:\FLASHDSK.SYS 4096
DEVICE = B:\VDISK.SYS 4096 /e
```

Figure 3-6 CONFIG.SAF File on Drive B

Drive C

Drive C is a resident flash disk drive that is accessed via the FLASHDSK.SYS device driver. By default, this drive is configured to have full read and write access. The default CONFIG.SYS and AUTOEXEC.BAT files reside here. You can modify these files to customize the system for an application. They will be called after the CONFIG.SYS and AUTOEXEC.BAT files on drives A and B are processed.

The Configuration Utility gives you the ability to customize what software tools and utilities are placed on the unit. By default, the utility installs this software to the C drive. If the unit is intended to be used with PC cards, then the Phoenix PC card drivers are installed in the PCM subdirectory on the C drive, and the proper entries will be transferred into the CONFIG.SYS and AUTOEXEC.BAT files. The exact configuration of files and the contents of the CONFIG.SYS and AUTOEXEC.BAT files will change according to the configuration of the unit.

For RF capability, additional files for network connectivity would be required. These might include a TELNET program or peer-to-peer networking tools, depending on what you choose to install.

If something happens to a unit and data integrity becomes questionable, use the CHKDSK utility to detect and correct errors on drive C. You can also use ORGANIZE.COM (on Drive C in the 2325) to recover unused sectors.

See Chapter 6 “Commands” for DOS and ROM-DOS command syntax.

Root Directory Files

AUTOEXEC.BAT	Called after the AUTOEXEC.BAT files on drives A and B are processed.
CONFIG.SYS	Called after the CONFIG.SYS files on drives A and B are processed.

DOS Directory Files

ATTRIB.COM	Displays or modifies file attributes.
CHKDSK.COM	Examines a disk and determines if the disk has any errors in the File Allocation Table

	has any errors in the File Allocation Table (FAT) and will optionally fix errors.
DELTREE.EXE	Deletes a directory and all it's subdirectories.
MORE.COM	Displays 25 lines of output at a time.
XCOPY.COM	Send or receive data using a comm port.

PCM Directory Files

CNFIGNAM.EXE	Specifies which PCM Plus configuration parameters are to be used, based on the selected boot configuration.
PCM.INI	Defines system resource requirements for all boot configurations which contain PCM Plus. When a boot configuration is specified, CNFIGNAM identifies the selection as CONFIG.SYS is loaded and requests the relevant configuration information from the PCM.INI file.
PCMATA.SYS	Device driver enables the system to access ATA-configured PC cards as IDE hard drive devices using an IDE partition table.
PCMCS.EXE	Must be loaded directly after Socket Services. Coordinates access to the PC cards and allocates PC system resources among client drivers.
PCMSS400.EXE	PCM socket services are located in this driver. The purpose of socket services is to provide a layer of software support to the actual PC hardware that controls PC-compatible sockets for PC cards.

Drive D

Drive D is a RAM disk drive. By default, this drive resides in extended memory and is sized 1MB less than the total RAM in the unit.

Drive D can be used for short-term data storage. Programs that need to be loaded into memory and then removed from memory quickly can also be located there. The drive can also be used for scratch disk space or temporary files.

The 2325 preserves the data on drive D between warm or cold boots by checking for an existing RAM disk. However, only minimal checking is performed on any disk that is found. If something happens to a unit and data integrity becomes questionable, you should use the CHKDSK utility to detect and correct errors on drive D.

Drive E

Drive E is the ATA flash card. The PC card looks like a hard disk drive to the operating system and the user. More flexible than flash disk drive C, it can be used for safer and more permanent bulk storage of batch data than the RAM disk (drive D). This drive exists only on systems configured to use ATA flash cards.

Drive E could also be a peer-to-peer or client-server network drive that is accessed through an RF or Ethernet network card link. This option allows the developer to make many network drives (drives E, F, etc.) available to applications.

System Configurations

Several configurations are possible for the system software on the unit, depending upon the type of hardware that is to be supported. Two standard configurations are described below, along with directory structures and default CONFIG.SYS and AUTOEXEC.BAT file descriptions.

Default Configuration

The configuration is created by DEFAULT.CFG in the Configuration Utility. The data files will be stored on drive D. PC card drivers able to support ATA cards will be loaded.

```
FILES = 30

REM --------------------------------
REM  Phoenix Card and Socket
REM  services for accessing PC Cards
REM --------------------------------
device = c:\pcm\cnfignam.exe /NORMAL
device = c:\pcm\pcmssit.exe
device = c:\pcm\pcmcs.exe
device = c:\pcm\pcmata.sys
```

Figure 3-7 CONFIG.SYS File on Drive C for Default Configuration

```
REM ------------------------------------
REM  The following lines set up
REM  default parameters for some
REM  environment variables. These lines
REM  may be modified or overridden in
REM  the USER section below.
REM ------------------------------------
set prompt=$p$g
set dircmd=/ogn /p

REM ------------------------------------
REM  The following section is for
REM  customized user entries.
REM  Insert user-specific options and
REM  commands here.
REM ------------------------------------

REM ------------------------------------
REM  The following lines add system
REM  components to the PATH
REM  and run the main application
REM  executable, if one was specified.
REM ------------------------------------
IF EXIST c:\bparams.ini copy c:\bparams.ini PARAMS
set path=c:\;c:\dos;%path%
```

Figure 3-8 AUTOEXEC.BAT File on Drive C for Default Configuration

I/O PC Card Support Configuration

The Configuration Utility has an option for support of I/O cards. This option will download the Phoenix Super Client Driver (PCMSCD.EXE) to the C:\PCM subdirectory on the 2325. It will also add the command for loading of this driver to the CONFIG.SYS file. The CONFIG.SYS and AUTOEXEC.BAT files below were created by eliminating ATA card support and adding I/O card support to DEFAULT.CFG.

```
FILES = 30
REM ------------------------------------
REM  Phoenix Card and Socket services
REM  for accessing PC Cards
REM ------------------------------------
device = c:\pcm\cnfignam.exe /NORMAL
device = c:\pcm\pcmssit.exe
device = c:\pcm\pcmcs.exe
device = c:\pcm\pcmscd.exe
```

Figure 3-9 CONFIG.SYS File on Drive C for I/O PC Card Support

```
REM ------------------------------------
REM  The following lines set up default
REM  parameters for some environment
REM  variables. These lines may be
REM  modified or overridden in the USER
REM  section below.
REM ------------------------------------
set prompt=$p$g
set dircmd=/ogn /p
REM ------------------------------------
REM  The following section is for
REM  customized user entries.
REM  Insert user-specific options and
REM  commands here.
REM ------------------------------------
REM  The following lines add system
REM  components to the PATH and runs the
REM  main application executable, if one
REM  was specified.
REM ------------------------------------
IF EXIST c:\bparams.ini copy c:\bparams.ini PARAMS
set path=c:\;c:\dos;%path%
```

Figure 3-10 AUTOEXEC.BAT File on Drive C for I/O Card Support

Data Entry

Note: The 2325 will not run Microsoft Windows products i.e. Windows 3.1, Windows For Workgroups, Windows 95, Windows NT, etcetera.

The LXE 2325 computer accepts data entry from the keyboard, barcode scanner and the RS-232 input port when an LXE terminal emulation (TE) program is running and on batch (non-TE) units.

Keyboard Data Entry

Once the terminal emulation program is started, data can be entered with the 2325 keypad. Keyed data can be entered into a data field and transmitted to the host. You might respond to a prompt sent by the host application with a keypad entry, such as a menu listing choices for your next action.

Barcode Data Entry

The 2325 supports an accessory barcode label reading device. Keyboard data entries can be mixed with barcode data entries. Any scanner that decodes the barcode internally and outputs an RS-232 data stream may be used. The serial port parameters may need to be changed (using the terminal emulation's configuration utility) to match the parameters of the scanner. COM port 1 is designed to be used with a hand held barcode scanner.

RS-232 Data Entry

The 2325 accepts input from an RS-232 device connected to either RS-232 port, COM1 or COM2. The 2325 processes data from the RS-232 port the same way it processes keyed data. The data is entered at the cursor position, and the data is subject to all of the barcode/RS-232 input menu parameters, such as truncate.

Terminal Emulation

Note: Narrowband and spread spectrum 900MHz radios are not supported at this time. For details concerning future capabilities, contact the LXE Product Marketing department.

All terminal emulation radio controlled data flows and exchanges are over the radio to the 64XX or 65XX units, then to the computer network and then to a host computer. The LXE Network Management System, as part of the wired network, can remotely configure the 2325's terminal emulation parameters.

Note: 2325's with 64XX series 2.4GHz spread spectrum radios communicate only with 64XX Access Points with installed 64XX 2.4GHz radios.

Note: 2325's with 65XX series 2.4GHz spread spectrum radios communicate only with 65XX Access Points with installed 65XX 2.4GHz radios.

Please refer to the system specific terminal emulation reference guide for instruction when using a 2325 in a specific TE environment. A list of LXE reference guides is located at the end of this chapter in the section titled "Manuals."

LXE's terminal emulation programs that are compatible with the 2325 computer are:

ANSI Plus

Running on a 2325 with a 2.4GHz radio. ANSI Plus uses a Telnet connection to communicate with the host computer. A 2325 with a 2.4GHz radio is interfaced to a computer network (Ethernet or Token-Ring) via 2.4GHz radio equipped 64XX or 65XX Access Points. ANSI Plus does not support Narrowband RF.

TN3270 TE and TN5250 TE

Runs on a 2325 with a 64XX or 65XX series 2.4GHz radio. The TE provides IBM host application support over the RF backbone and TCP/IP network. SNA Server software running on an LXE 6600 Gateway provides TN services to the 2325 allowing it to communicate

with the IBM host. This product does not provide interconnectivity for LXE's narrowband and 900MHz RF backbones.

DOS Terminal Emulation User Defined Stored Forms

DOS terminal emulations have the following space requirements for user defined stored forms:

ANSI Plus	2K required for each form
TN3270	1K required for each form
TN5250	1K required for each form

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Chapter 4
The Configuration Utility

Chapter 4
The Configuration Utility

Introduction

The Configuration Utility provides a simple way to change the 2325's settings for barcode symbologies and serial communications. You can also use it to load programs and files into the 2325 or copy files from the 2325 to the PC.

The utility runs on a PC under Windows 3.1x, Windows 95, and Windows NT. This chapter describes how to install the utility and use it to configure the 2325.

Installing and Starting the Utility on a PC

To install the configuration utility, insert the Configuration Utility diskette in the PC's floppy drive (usually Drive A). Then complete the following steps:

1. In Windows, run the SETUP.EXE file from the disk in Drive A.
2. In the "Installation Options" window, select the radio components you'd like to install, if any. Select Next to move on.
3. In the "RF Installation Options" window, uncheck the check boxes for any components you do not want to install. Then select Next to move on.
4. In the "Select a Group Name" window, select a program group in which to place the Configuration Utility icons. Select Next to move on.
5. In the next window, specify the directory in which to place the Configuration Utility files. Select Next to move on.
6. When the installation is completed, select Finish in the final window.

To start the Configuration Utility, double-click on it's icon in the program group.

The first screen that appears is the Main Menu.

BIOS Upgrade File Location

The LXE 2325 Configuration Utility diskettes include a utility to upgrade the system software on the 2325. This software, along with instructions in a README.TXT file, is installed to C:\LXE\2325\16LINE\COREUPD subdirectory on the user's PC during configuration utility installation.

RF Files Location

The RF software is installed to the \LXE\2325 subdirectory by default. If your software was installed to a different directory, substitute that directory in the text that follows. If all network options were selected during installation, the following files will be on your PC.

Proxim

\LXE\2325\RF\PROXIM

RL2PCM.DOS	RangeLAN2 NDIS driver
RL2PCM.COM	RangeLAN2 ODI driver

\LXE\2325\16LINE\RF\PROXIM

NET.CFG	ODI configuration sample NET.CFG for LXE 2325
PROTOCOL.1	Netbeui configuration sample PROTOCOL.INI for LXE 2325
PROTOCOL.2	NDIS to packet driver sample PROTOCOL.INI for LXE 2325

\LXE\2325\RF\NETWORK

DIS_PKT.ASM	NDIS packet driver shim source code
DIS_PKT.DOS	NDIS packet driver shim

IPXODI.COM	IPX/SPX protocol driver
LSL.COM	Link Support Layer
ODIPKT.ASM	ODI packet driver shim source code
ODIPKT.COM	ODI packet driver shim
TCPIP.EXE	TCP/IP protocol driver

\LXE\2325\RF\NETWORK\NWCLIENT

NETSTART.BAT	Batch file to execute VLM
VLM.EXE	Virtual Loadable Module Manager (VLM)
*.VLM	Virtual loadable modules.

\LXE\2325\PROGRAM\CONFIGS

These are configuration files used by the Configuration Utility to control the downloading of files to the portable.

PX_TCPIP.CFG	RangeLAN2 TCP/IP configuration
PX_VLM.CFG	RangeLAN2 VLM configuration
PX_IPX.CFG	RangeLAN2 IPX/SPX configuration
PX_NBEUI.CFG	RangeLAN2 Netbeui sample configuration
PX_PKDRV.CFG	RangeLAN2 packet driver sample configuration

Note: A Netbeui configuration sample is included in the installation. However, LXE 2325 RF does not include Netbeui drivers. These drivers must be acquired from Microsoft.

Lucent

The RF software is installed to the \LXE\2325 subdirectory by default. If your software was installed to a different directory, substitute that directory in the text that follows. If all network options were selected during installation, the following files will be on your PC.

\LXE\2325\RF\LUCENT

WVLANCAD.SYS	WaveLAN card access driver
WVLAN42.COM	WaveLAN packet driver
WVLAN43.COM	WaveLAN ODI driver

\LXE\2325\16LINE\RF\LUCENT

NET.CFG	ODI configuration sample NET.CFG for LXE 2325

\LXE\2325\RF\NETWORK

IPXODI.COM	IPX/SPX protocol driver
LSL.COM	Link Support Layer
ODIPKT.ASM	ODI packet driver shim source code
ODIPKT.COM	ODI packet driver shim
TCPIP.EXE	TCP/IP protocol driver

\LXE\2325\RF\NETWORK\NWCLIENT

NETSTART.BAT	Batch file to execute VLM
VLM.EXE	Virtual Loadable Module Manager (VLM)
*.VLM	Virtual loadable modules.

\LXE\2325\PROGRAM\CONFIGS

These are configuration files used by the Configuration Utility to control the downloading of files to the portable.

LU_TCPIP.CFG	WaveLan TCP/IP configuration
LU_VLM.CFG	WaveLan VLM configuration
LU_IPX.CFG	WaveLan IPX/SPX configuration

Quick Start

Note: Activity specific Help is available when the Help button is present on the configuration utility screen.

The following instructions are based on the following assumptions:

- The Configuration Utility is installed on a PC,
- the 2325 is in a powered dock,
- the appropriate cable is connecting the dock and the PC, and
- the Comm settings in the PC and the 2325 match.

Transfer file(s) from the PC to the 2325 or from the 2325 to the PC

1. Main Menu | Transfer Files | Add |
2. Enter path and filename on PC or select Browse to browse the files on the PC *only*.
3. Enter path and filename on 2325. Select OK to continue.
4. When file list is complete:
   - To send files to the 2325, click Send. Save file list if needed.
   - To send files to the PC, click Receive. Save file list if needed.
5. Click OK on Important Dialog Box.
6. Click Done to return to Main Menu.

Set up 2325 parameters

1. Main Menu | Custom |
2. Select Configuration File. Select OK to continue.
3. Select Program Settings File. Select OK to continue.
4. Select Program Settings.
5. Make changes in 1st through 4th Program Settings Windows. Select Next to continue from one to the next.
6. Make changes in 5th Program Settings Window. Select Done to return to Custom Configuration screen.
7. Select Download. Save Configuration File and Program Settings file with a new name, if needed.
8. Select Send. Save file list if needed.
9. Click OK on Important Dialog Box.
10. Click Done to return to Main Menu.

Create a custom file configuration file

1. Main Menu | Custom |
2. Select Configuration File. Click the "Open as read-only" box – a checkmark should appear. Select OK to continue.
3. Select Program Settings File. Click the "Open as read-only" box – a checkmark should appear. Select OK to continue.
4. Click the "Program Settings Using" box – the checkmark should disappear.
5. Select File Configuration.
6. Change Main Application, if needed.
7. Add, edit or delete Main Application files, if needed.
8. Select Next to continue to 2nd File Configuration Window.
9. Select / deselect types of files.
10. Select More to add or remove DOS files from the filelist. Select Done to return to the 2nd File Configuration Window.
11. Select Next to continue to 3rd File Configuration Window. Make changes to BAT or TXT files if needed.
12. Select Done to return to the File Configuration Screen.
13. Select Done to return to the Custom Configuration Menu.
14. Save changes to current file configuration, changing name of file if needed.

The Main Menu

Note: The figures in this chapter reflect the screen displays for the DEFAULT.CFG and DEFAULT.PRS files. Each configuration file (CFG) requires a companion program settings file (PRS).

Note: Based upon your PC and 2325 directory contents, your screens may not look exactly like the screens displayed in this section, but the functions are the same as described.

This menu gives you access to all the configuration settings for the 2325.

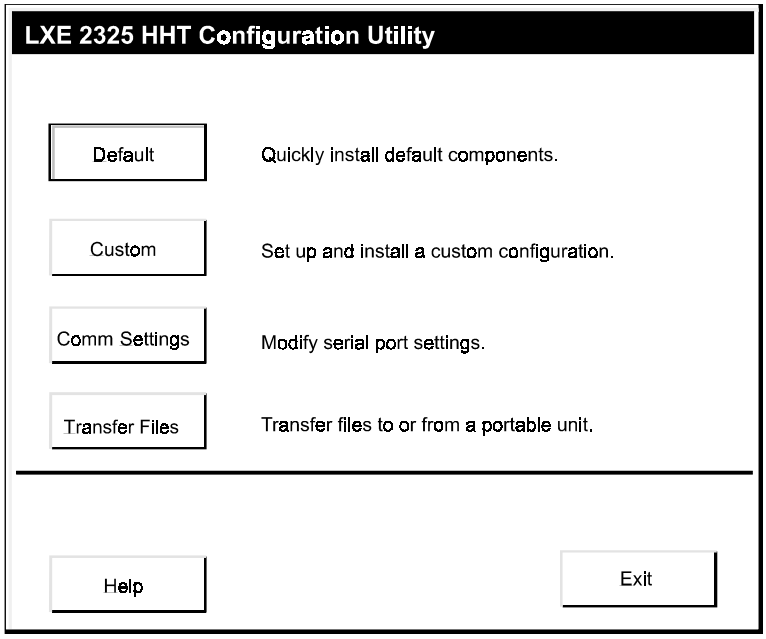

Figure 4-1 Configuration Utility Main Menu

Default

Select this option to load the original factory configuration into your 2325.

Custom

Select this option to choose or modify configuration files or program files to be loaded into your 2325. See the section titled “The Custom Configuration Menu” for information on using the Custom Configuration menu.

Comm Settings

Select this option to modify settings for your computer’s serial port. See the section titled “Comm Settings” for information.

Transfer Files

Select this option to transfer data files between the 2325 and the host computer. See the section titled “Transfer Files” for information.

Default

Select this option to load the original factory configuration into your 2325. The configuration utility prepares files to be transferred to the 2325 and opens a dialog box titled “Important.” Check the file lists in both sections of the dialog box to see if they are correct and complete. If you need to add, delete, or rename files, select from the dialog box. Then use the selection in the main menu to build your own lists.

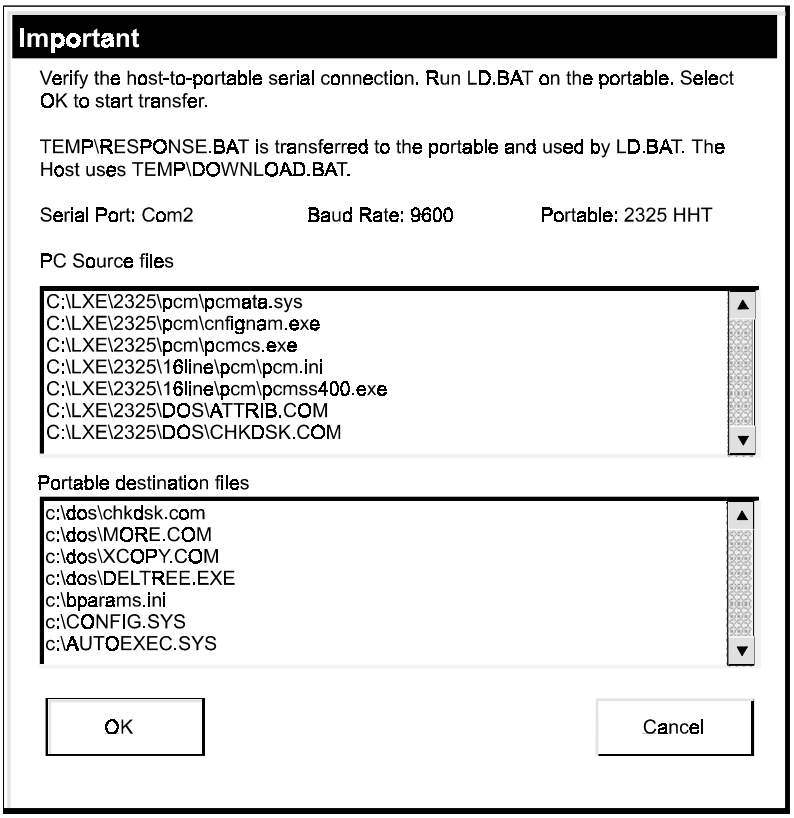

Figure 4-2 Example - The Important Dialog Box

If the file lists in the dialog box are correct, make sure your 2325 is properly connected to the serial port specified in the Comm Settings dialog box (default is COM 1 at 9600 baud). Then run the **LD.BAT** file on the 2325, and select OK in the “Important” dialog box on the computer.

The Custom Configuration Menu

When you select **Custom** from the main menu, an Open dialog box appears. Use this dialog box to select a configuration file from the Configs folder. The configuration file contains the information that will be presented when you select the File Configuration button on the Custom Configuration menu.

Select a configuration file and click Open.

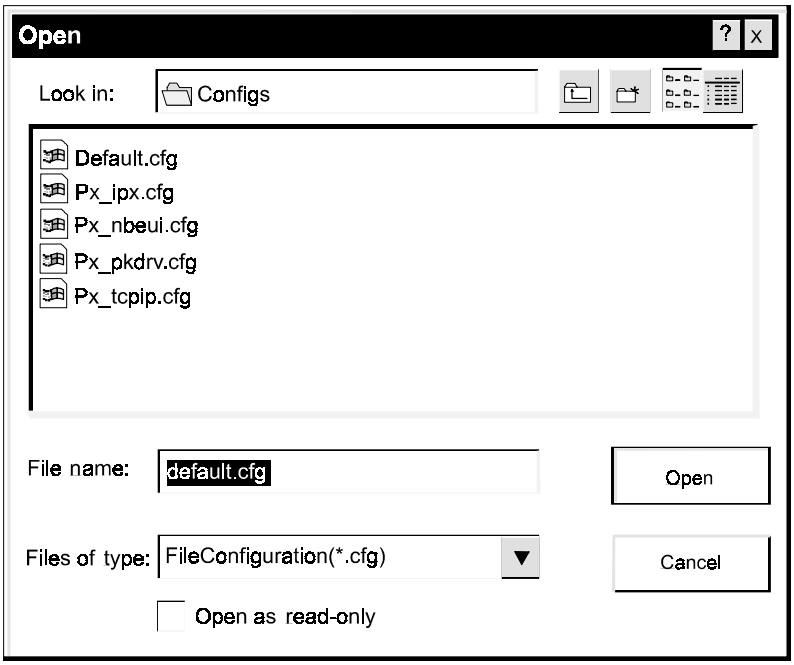

Figure 4-3 Example - The Open Dialog Box for Selecting a Configuration File

*Note: If you select **Open as read-only** and make changes to the configuration settings, you will need to use a new name for the file to save the changes.*

When the configuration file is finished loading, a second Open dialog box appears.

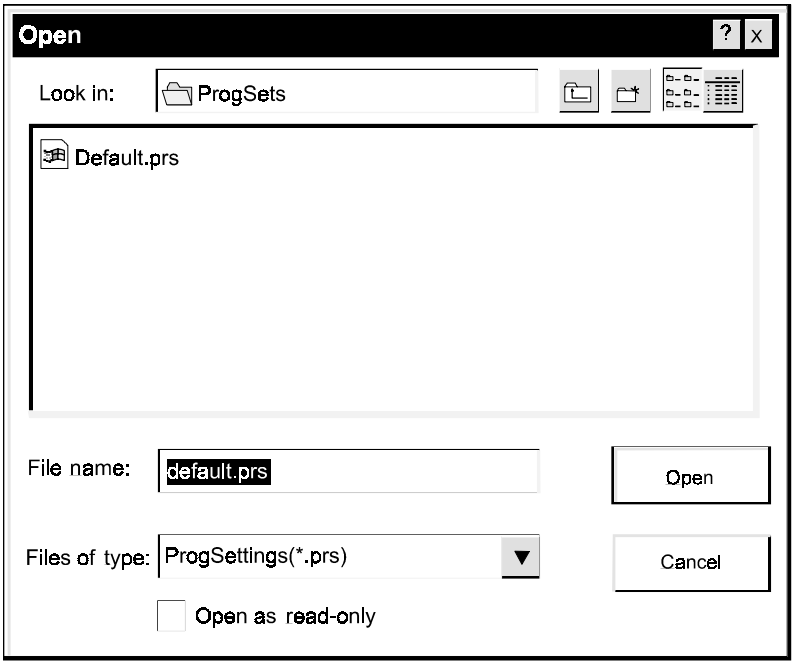

Figure 4-4 Example - The Open Dialog Box for Selecting a Program Settings File

*Note: If you select **Open as read-only** and make changes to the program or parameter settings, you will need to use a new name for the file to save the changes.*

Use this dialog box to select a program-settings file from the Progsets folder. The program-settings file contains the information that will be presented when you select the Program Settings button on the Custom Configuration menu.

Select a program settings file and click Open.

After the program-settings file is loaded, the Custom Configuration menu appears.

If you do **not** want to load any files, click the checked box to remove the checkmark. Upon selecting Download, a message appears stating there were no files selected.

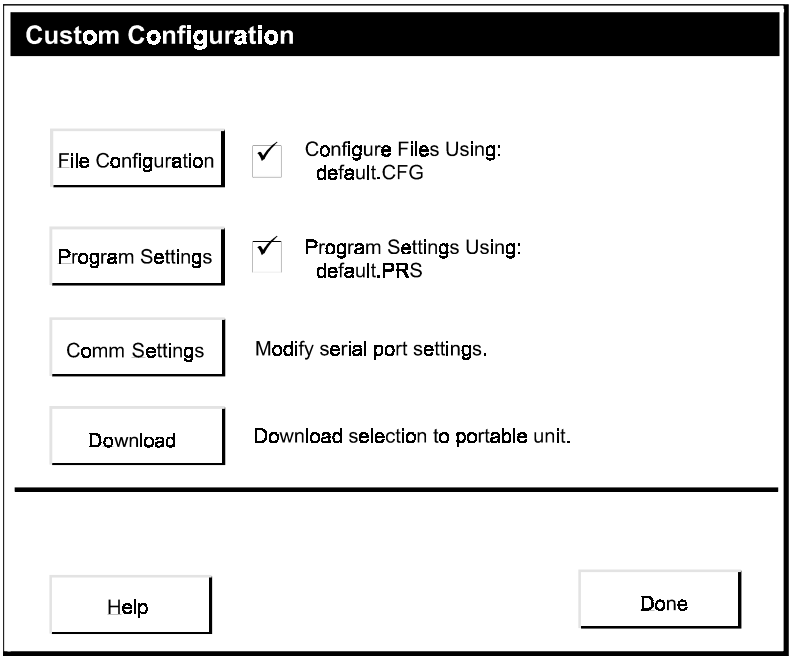

Figure 4-5 Example - The Custom Configuration Menu

File Configuration	Select this option to choose application files to be loaded into the 2325. See section titled “File Configuration Windows” for information.
Configure Files Using	This field shows the configuration file that will be used to specify the files that will be loaded into the 2325. If you do not want to load any files, check the box to remove the checkmark and turn the switch off.
Program Settings	Select this option to view or change settings for barcode symbologies and other programmable 2325 options. See section titled “The Program Settings Windows” for information.

Program Settings Using	This field shows the program-settings file that will be used. If you do not want to load any program settings, turn the switch off.
Comm Settings	Select this option to view or change serial communications settings for the 2325. See section titled “The Comm Settings Dialog Box” for information.
Download	When you finish customizing the 2325 configuration, select this option to load the custom configuration into your 2325. When you select it, the configuration utility prepares files to be transferred to the 2325 and opens the Important dialog box. Make sure your 2325 unit is properly connected to the serial port specified in the Comm Settings dialog box. Then run the **LD.BAT** file on the 2325, and select **OK** in the Important dialog box on the computer.
Done	Select this option to return to the main menu. After selecting Done and if you made any changes to the file configuration or program settings, one or both of the following prompts appear:

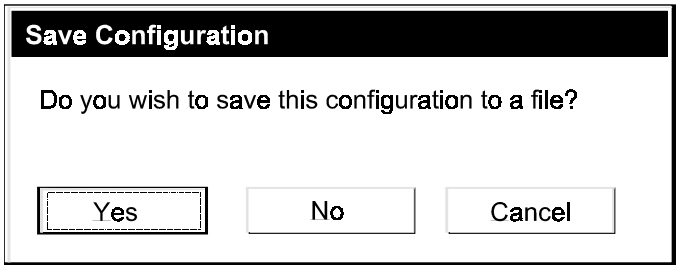

Figure 4-6 The Prompt for Saving Changes to the Current File Configuration

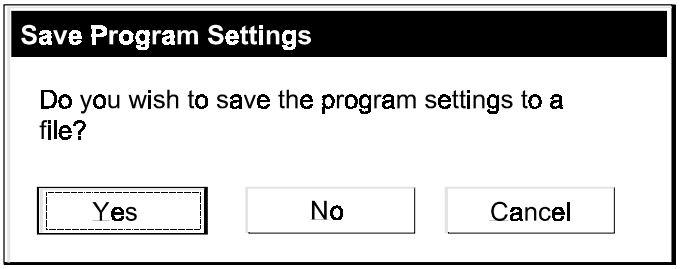

Figure 4-7 The Prompt for Saving Changes to the Current Program Settings

Yes	Select this option to save the changes. A Save As dialog box will open. Use the dialog box to specify the location and name of the new configuration or program-settings file.
No	Select this option to discard the changes.
Cancel	Select this option to return to the Custom Configuration menu without saving or discarding the changes.

The File Configuration Windows

When you select **File Configuration** from the Custom Configuration Menu, the first of three File Configuration windows appears. Use these windows to choose application files to be loaded into the 2325.

First File Configuration Window

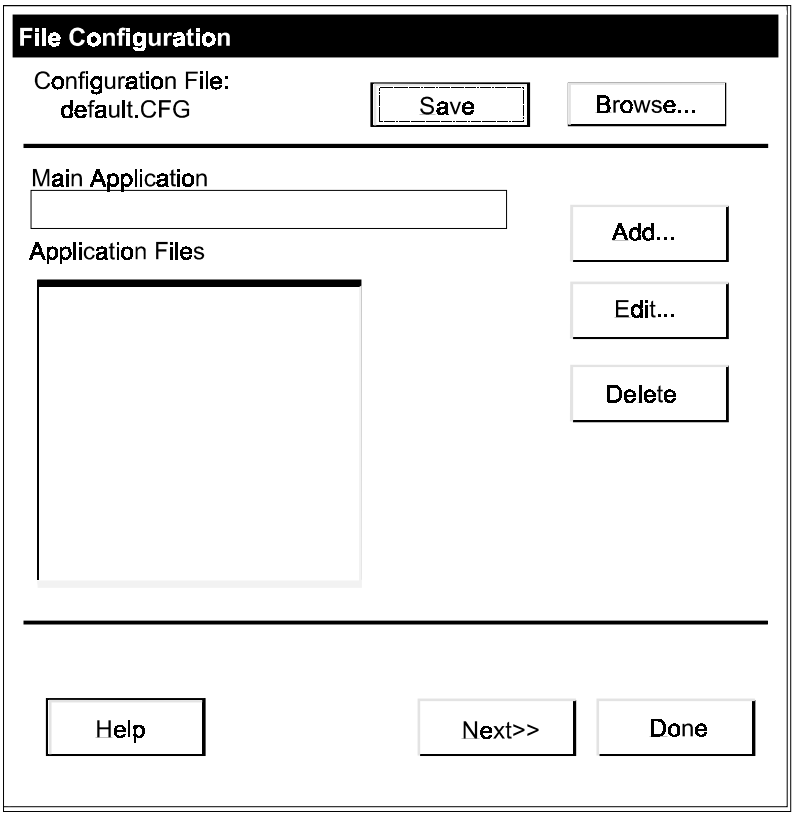

Figure 4-8 Example - The First File Configuration Window

Configuration File

This field shows the configuration file used to specify the files that will be loaded into the 2325.

Save

After adding, editing, or deleting files in the Application Files list, select Save to save the revised list in the current configuration file or in a new one.

Browse

Select Browse to use a different configuration file. An Open dialog box will appear. Use the dialog box to choose a configuration file from the Configs folder. (If you select Browse after making changes in this or any other File Configuration window without saving the changes, the prompt for saving changes to the current file configuration will appear.)

Main Application

This field identifies the default application that will run on the 2325 after you complete the installation.

Application Files

This field lists the files associated with the main application.

Add

Select this option to include other files to be installed on your 2325. The File Selection dialog box opens.

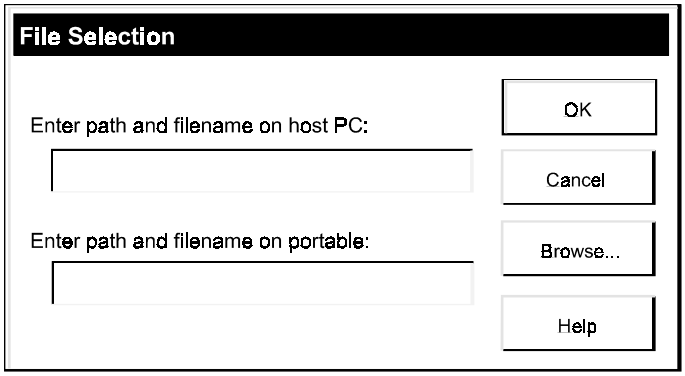

Figure 4-9 The File Selection Dialog Box for Adding an Application File

Note: The files are added one at a time. Wildcards are not allowed. The path a filename must be entered for each file for both the PC and the portable. All targeted subdirectories must already exist on the PC and the portable.

File Selection

Enter path and filename on host PC

Use this field to specify the file you want to transfer to the 2325.

Enter path and filename on portable

Use this field to specify the location and name you want the transferred file to have on the 2325. The name can be the same as the original file or you can give the file a new name.

Main Application

Turn this switch on if you want the specified file to be the main application on the 2325.

Note: Only one file can be selected as the main application for a 2325. To select another file as the main application, you must first highlight the current one in the Application Files list in the File Configuration window, select Edit, and turn off the Main Application switch for that file.

OK

Select OK to return to the File Configuration window. The specified source file will appear in the Application Files list.

Cancel

Select Cancel to return to the File Configuration window without adding a file to the Application Files list.

Browse

Select Browse to view the files on your computer. An Open dialog box will appear. Use the dialog box to choose a source file to be included in the Custom configuration.

Edit

Select a file in the Application Files list and then select **Edit** to change the source path or destination path for the file. The Edit File Properties dialog box opens.

For information on using this dialog box, see “Add.”

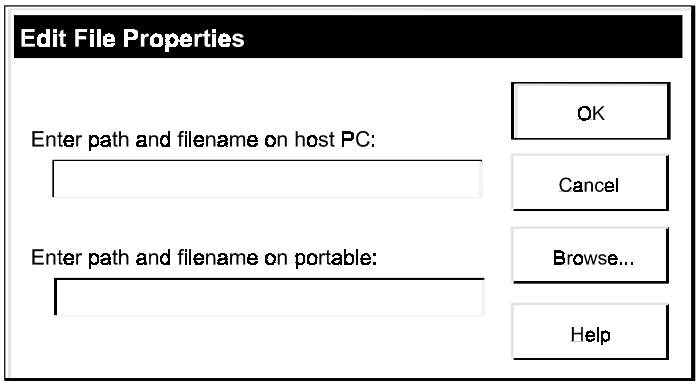

Figure 4-10 The Edit File Properties Dialog Box for an Application File

Delete

To delete a file from the Application Files list, select the file in the list and then select **Delete**.

Next

Select **Next** to view or change additional file-configuration options for the custom installation.

The second File Configuration window appears if you select **Next** in the first window.

Done

Select **Done** if you are finished setting file-configuration options for the custom installation at the First File Configuration Window.

Second File Configuration Window

The second File Configuration window appears if you select **Next** in the first window.

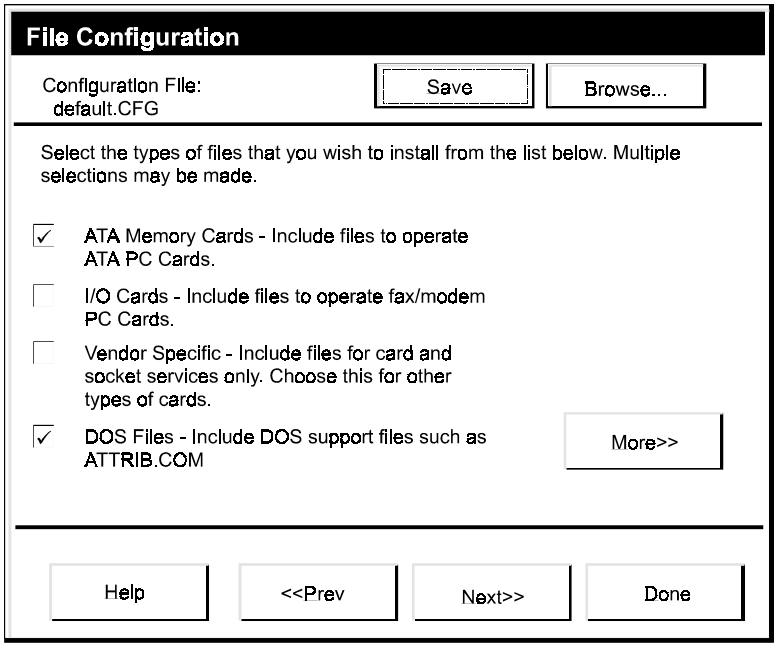
File Configuration
Configuration File:
default.CFG
Save
Browse...
Select the types of files that you wish to install from the list below. Multiple selections may be made.
ATA Memory Cards - Include files to operate ATA PC Cards.
I/O Cards - Include files to operate fax/modem PC Cards.
Vendor Specific - Include files for card and socket services only. Choose this for other types of cards.
DOS Files - Include DOS support files such as ATTRIB.COM
More>>
Help
<<Prev
Next>>
Done

Figure 4-11 Example - The Second File Configuration Window

Configuration File

This field shows the configuration file used to specify the files that will be loaded into the 2325.

ATA Memory Cards

Turn this switch on to transfer drivers for ATA memory cards to the 2325.

I/O Cards

Turn this switch on to transfer drivers for fax/modem cards to the 2325.

Vendor Specific

Turn this switch on to transfer drivers for other types of PC cards.

DOS Files

Turn this switch on to transfer files for DOS commands and utilities to the 2325. Select “More” to add or remove DOS files from the custom installation.

Save

After changing selections in this window, select Save to save the revisions in the current configuration file or in a new one.

Browse

Select Browse to use a different configuration file. An Open dialog box will appear. Use the dialog box to choose a configuration file from the Configs folder. (If you select Browse after making changes in this or any other File Configuration window without saving the changes, the prompt for saving changes to the current file configuration will appear.)

More

Select More to add or remove DOS files from the custom installation. The Select DOS Files dialog box appears.

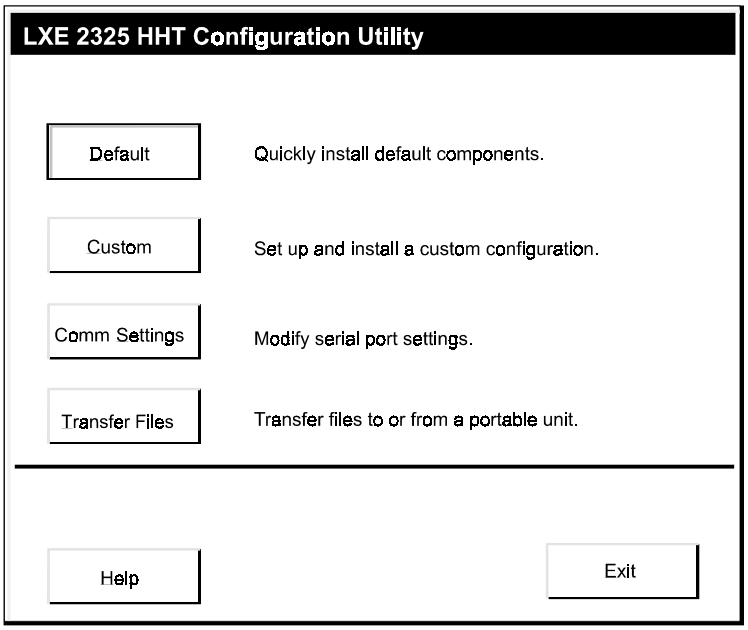

Figure 4-12 Example - The Select DOS Files Dialog Box

More

Highlight DOS files to download to portable

This field lists DOS files that are available. Files that are highlighted are currently selected to be included in the custom installation. Click on a file to select it or deselect it.

Directory on portable to store DOS files

Use this field to specify where the DOS files should be placed in the 2325.

Done

Select Done to return to the File Configuration window.

Prev

Select Prev to return to the previous file-configuration window.

Next

Select Next to move on to the next file-configuration window. The third File Configuration window appears if you select Next in the second window.

Done

Select Done if you are finished setting file-configuration options for the custom installation.

Third File Configuration Window

The third File Configuration window appears if you select **Next** in the Second File Configuration Window.

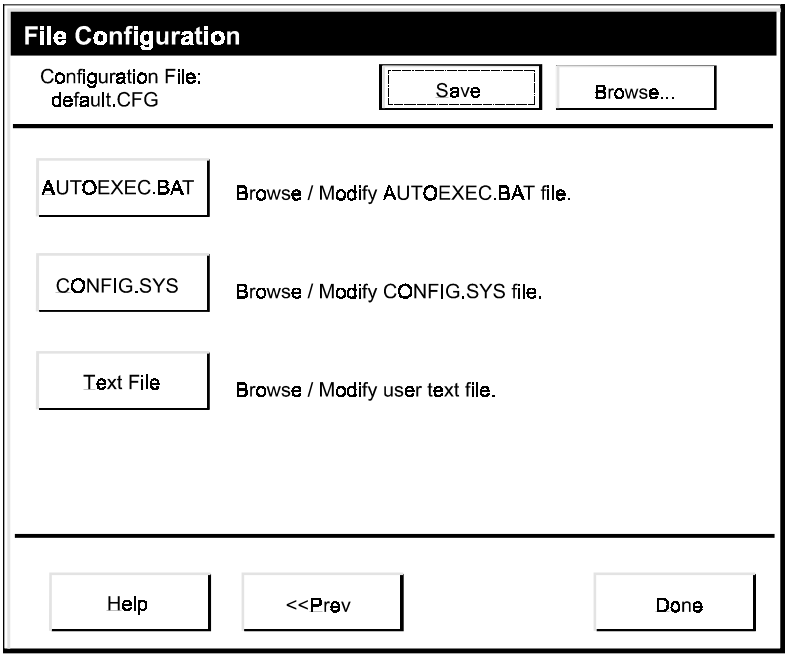

Figure 4-13 Example - The Third File Configuration Window

Configuration File

This field shows the configuration file used to specify the files that will be loaded into the 2325.

Save

After selecting options in this window, select **Save** to save the revisions in the current configuration file or in a new one.

Browse

Select **Browse** to use a different configuration file. An Open dialog box will appear. Use the dialog box to choose a configuration file from the Configs folder. (If you select Browse after making changes in this or any

other File Configuration window without saving the changes, the prompt for saving changes to the current file configuration will appear.)

autoexec.bat

Select this option to insert new commands into the AUTOEXEC.BAT file that will be transferred to the 2325.

config.sys

Select this option to insert new commands into the CONFIG.SYS file that will be transferred to the 2325.

Text File

Select this option to view or modify any text file that will be transferred to the 2325.

Prev

Select **Prev** to return to the previous file-configuration window.

Done

Select **Done** if you are finished setting file-configuration options for the custom installation.

The Program Settings Windows

When you select **Program Settings** from the Custom Configuration Menu, the first of five Program Settings windows appears. Use these windows to view or change settings for barcode symbologies and other programmable options.

The Program Settings Windows (1 through 5) may or may not have:

On/Off Switches	The smallest white boxes are on/off switches. Click in the box to toggle a switch. When a checkmark appears in the box, the switch is ON.
Input Fields	Input fields do not usually have a drop down arrow to the right. Place the cursor in the input field to enter specific settings for parameters in the larger white boxes. (See appendix B for a table of parameters and settings.)
Drop-Down Lists	Click on the drop down arrow to the right of the list to view the options, and click on the option you want to select. This field cannot be edited.
Radio Buttons	Radio buttons allow you to select one value for a parameters. Select the setting you want by clicking on it. The parameter value is selected when the radio button is filled in.

Program Settings File

This field shows the program-settings file that will be loaded into the 2325.

Save

After selecting options in this window, select Save to save the revisions in the current program-settings file or in a new one.

Browse

Select Browse to use a different program-settings file. An Open dialog box will appear. Use the dialog box to choose a program-settings file from the Progsets folder. (If you select Browse after making changes in this or any other File Configuration window without saving the changes,

the prompt for saving changes to the current program settings will appear.)

Prev

Select Prev to return to the previous program-settings window.

Next

Select Next to move on to the next program-settings window. The last Program Settings window appears if you select Next in the fourth window.

Done

Select Done if you are finished making program settings for the custom installation.

First Program Settings Window (Default.PRS)

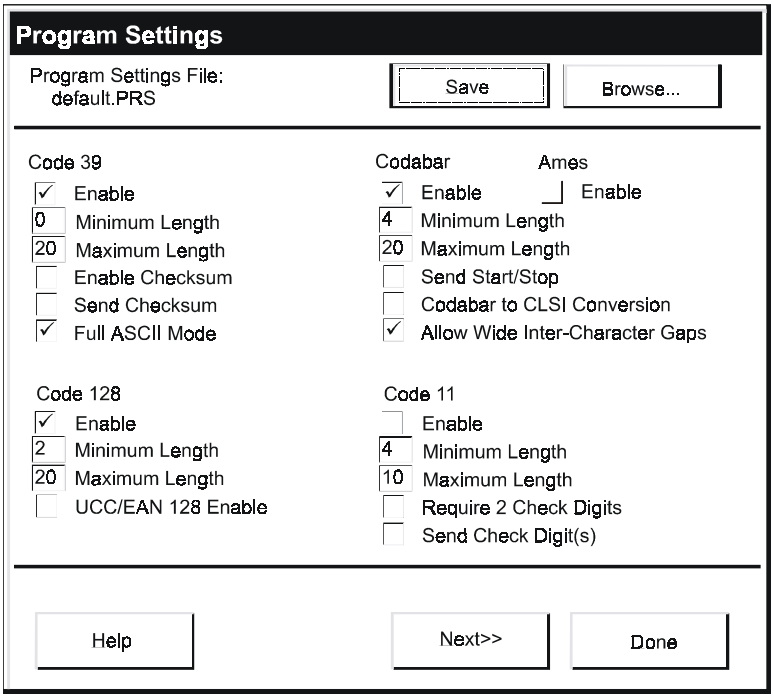

Figure 4-14 Example - The First Program Settings Window

Upon clicking Done, you are returned to the Custom Configuration screen. Select Done to return to the Main Menu.

Second Program Settings Window (Default.PRS)

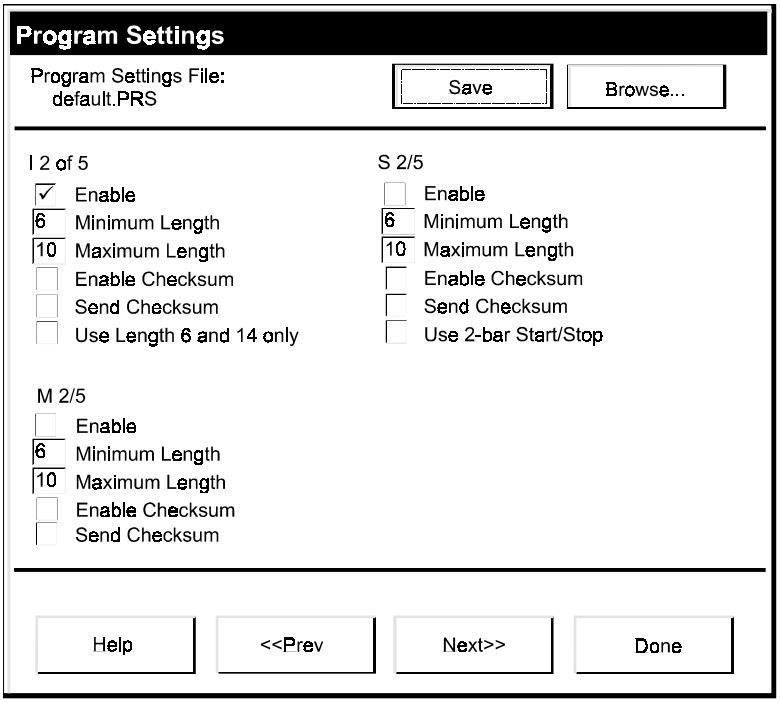

Figure 4-15 Example - The Second Program Settings Window

Select **Prev** to return to the first window, **Next** to continue to the third window and **Done** if you are finished making program settings for the custom installation.

Upon clicking Done, you are returned to the Custom Configuration screen. Select Done to return to the Main Menu.

Third Program Settings Window (Default.PRS)

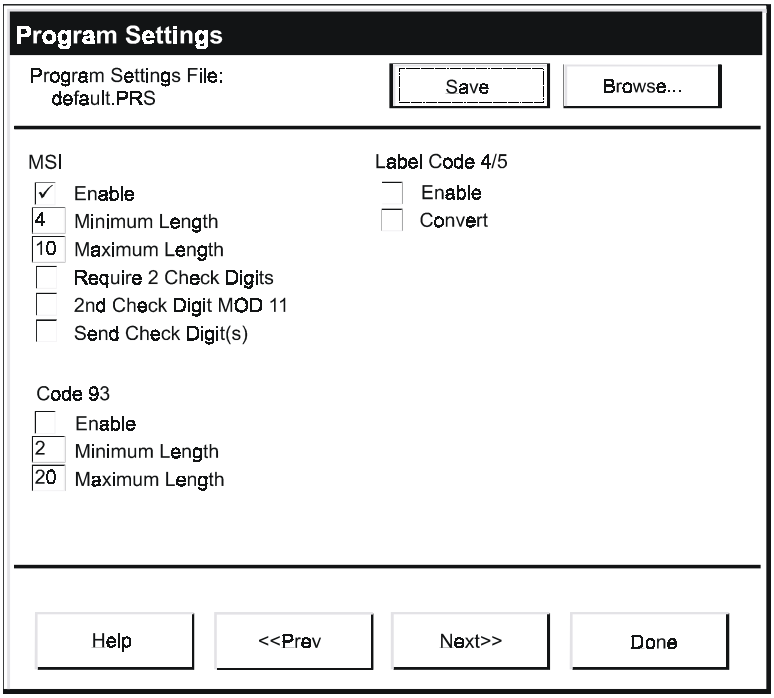

Figure 4-16 Example - The Third Program Settings Window

Select **Prev** to return to the second window, **Next** to continue to the fourth window and **Done** if you are finished making program settings for the custom installation.

Upon clicking Done, you are returned to the Custom Configuration screen. Select Done to return to the Main Menu.

Fourth Program Settings Window (Default.PRS)

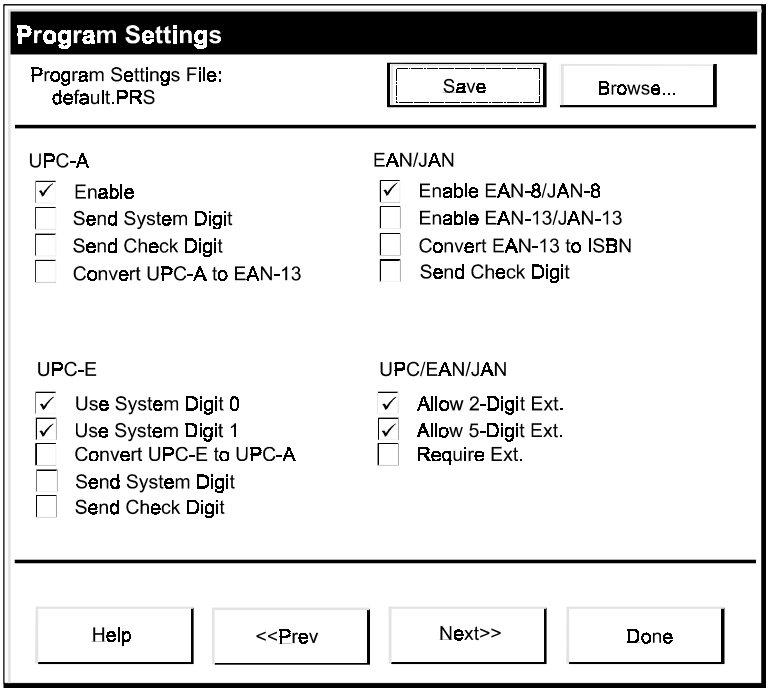

Figure 4-17 Example - The Fourth Program Settings Window

Select **Prev** to return to the third window, **Next** to continue to the fifth and last window and **Done** if you are finished making program settings for the custom installation.

Upon clicking Done, you are returned to the Custom Configuration screen. Select Done to return to the Main Menu.

Fifth Program Settings Window (Default.PRS)

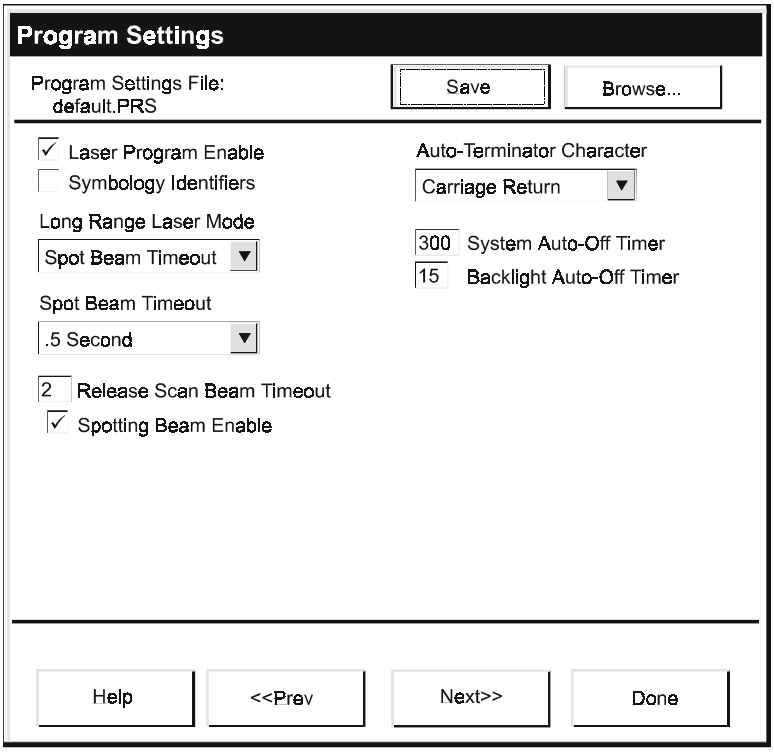

Figure 4-18 Example - The Fifth Program Settings Window

Select **Prev** to return to the fourth window, **Next** to continue to the sixth and last window and **Done** if you are finished making program settings for the custom installation.

Upon clicking Done, you are returned to the Custom Configuration screen. Select Done to return to the Main Menu.

Last Program Settings Window (Default.PRS)

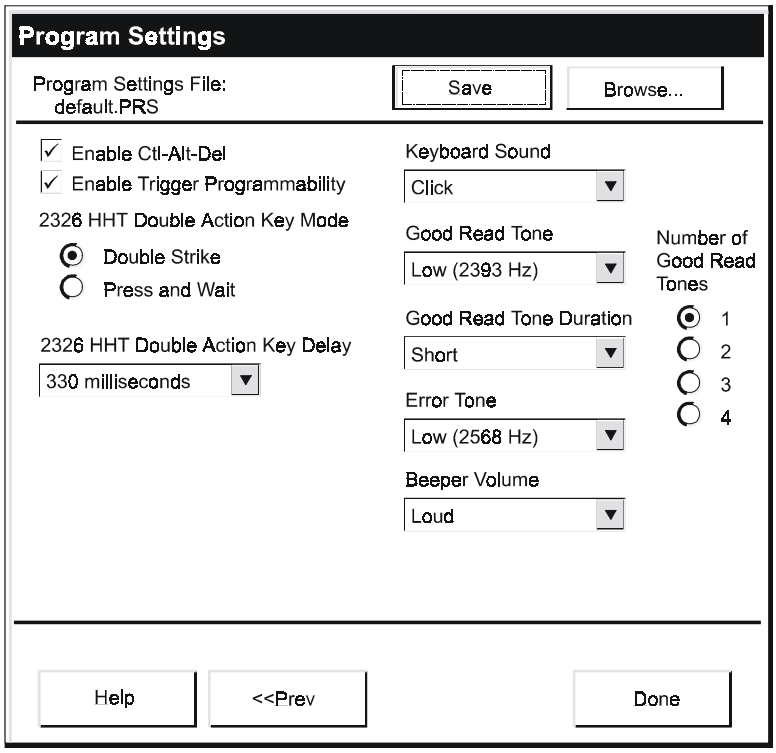

Figure 4-19 Example - The Last Program Settings Window

Select **Prev** to return to the fifth window and **Done** if you are finished making program settings for the custom installation.

Upon clicking Done, you are returned to the Custom Configuration screen. Select Done to return to the Main Menu.

The Comm Settings Dialog Box

When you select **Comm Settings** from the main menu or the Custom Configuration menu, the Comm Settings dialog box appears. Use this dialog box to view or change settings for serial communications from the PC to the 2325.

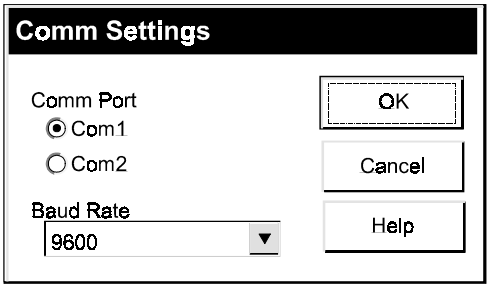

Figure 4-20 The Comm Settings Dialog Box

Radio Buttons	Radio buttons allow you to select one value for a parameter. Select the setting you want by clicking on it. The parameter value is selected when the radio button is filled in.
Drop-Down Lists	Click on the drop down arrow to the right of the list to view the options, and click on the option you want to select. This field cannot be edited.

Comm Port

Select the serial port that your PC will use to communicate with the 2325. The default port is COM1.

Baud Rate

Select the baud rate for serial communications between your PC and the 2325. The default baud rate is 9600.

The File Transfer Window

When you select **Transfer Files** from the main menu, the File Transfer window appears. Use this window to select data files for transfer between the 2325 and your computer.

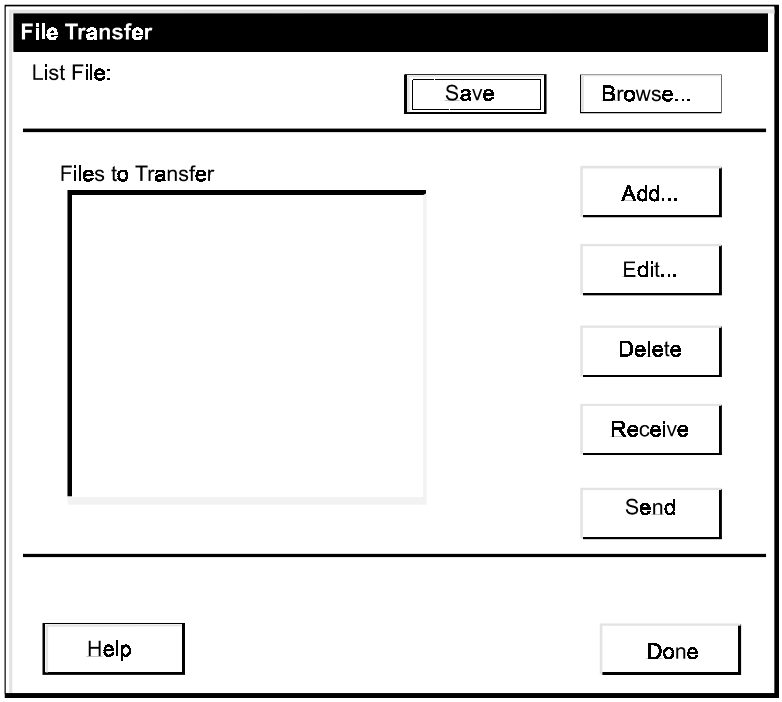

Figure 4-21 The File Transfer Window

List File

This field shows the name of the file-list file, if you have one selected.

Note: You can select files to transfer without using or creating a list file.

Save

After making changes in the Files to Transfer list, you can select Save to save the revisions in the current file-list file (if any), in another existing file, or in a new file.

Browse

Select Browse to use a different file-list file. An Open dialog box will appear. Use the dialog box to choose a file-list file from the Filelist folder. If you select Browse after making changes in the File Transfer window without saving the changes, the following prompt will appear:

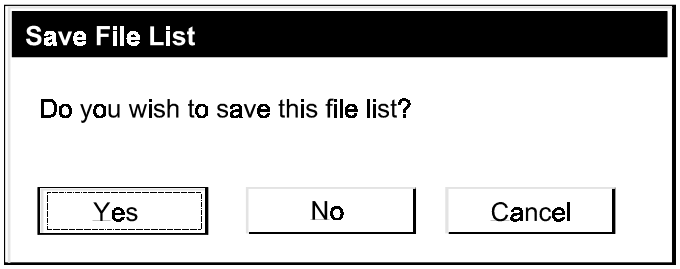

Figure 4-22 The Prompt for Saving Changes to the Current File List

Browse and Save Changes

Yes
Select this option to save the changes. A Save As dialog box will open. Use the dialog box to specify the location and name of the new file-list file.

No
Select this option to discard the changes.

Cancel
Select this option to return to the File Transfer window without saving or discarding the changes.

Files to Transfer

This field shows the files that will be included in the transfer between the 2325 and the PC.

Add

Select Add to include additional data files in the transfer. The File Selection dialog box opens.

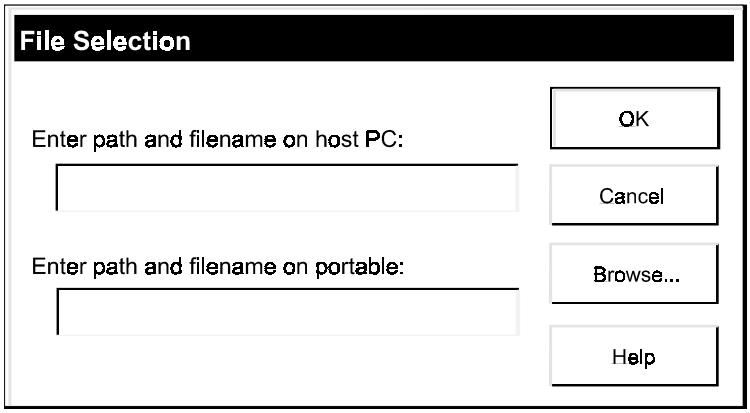

Figure 4-23 The File Selection Dialog Box for Adding a Data File

Enter path and filename on host PC

Use this field to specify the location of the file on the PC.

Enter path and filename on portable

Use this field to specify the location and name you want the transferred file to have on the 2325.

OK

Select OK to return to the File Transfer window. The specified data file will appear in the Files to Transfer list.

Cancel

Select Cancel to return to the File Transfer window without adding a file to the Files to Transfer list.

Browse

Select Browse to view the files on your computer. An Open dialog box will appear. Use the dialog box to choose a data file to be included in the transfer.

Edit

Select a file in the file list and then select Edit to change the source path or destination path for the file. The Edit File Properties dialog box opens. The fields and buttons in this dialog box are the same as in the File Selection dialog box above.

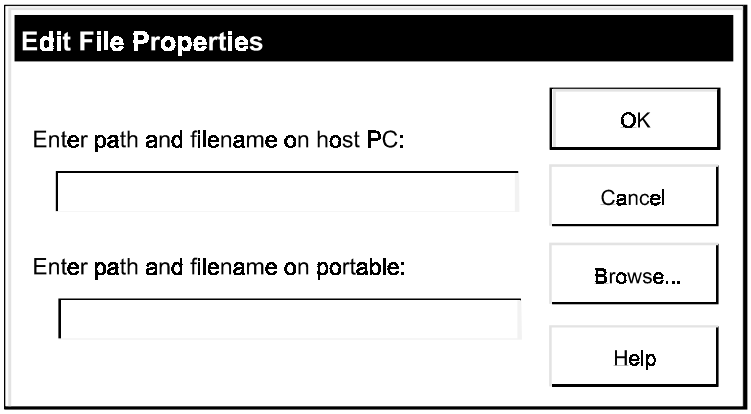

Figure 4-24 The Edit File Properties Dialog Box for Editing a Data File

Delete

To delete a file from the list, select the file and then select Delete.

Receive

Select Receive to begin a file transfer from the 2325 to the PC.

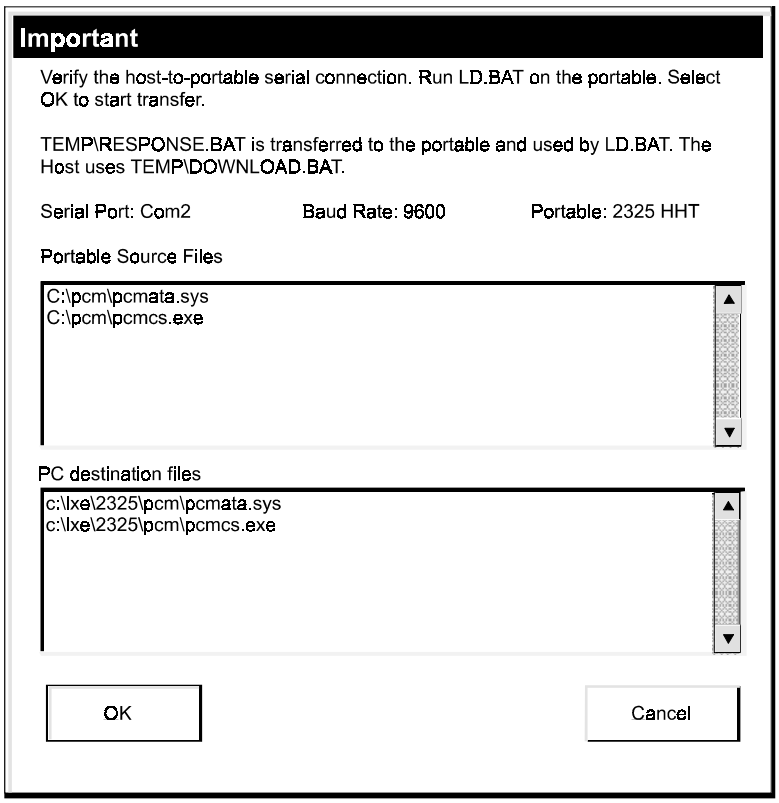

Figure 4-25 Example - PC Receiving Files from 2325

When you select it, the configuration utility prepares files to be transferred to the PC and opens the Important dialog box. Make sure your 2325 unit is properly connected to the serial port specified in the Comm Settings dialog box. Then run the LD.BAT file on the 2325, and select OK in the Important dialog box on the PC.

Send

Select Send to begin a file transfer from the PC to the 2325.

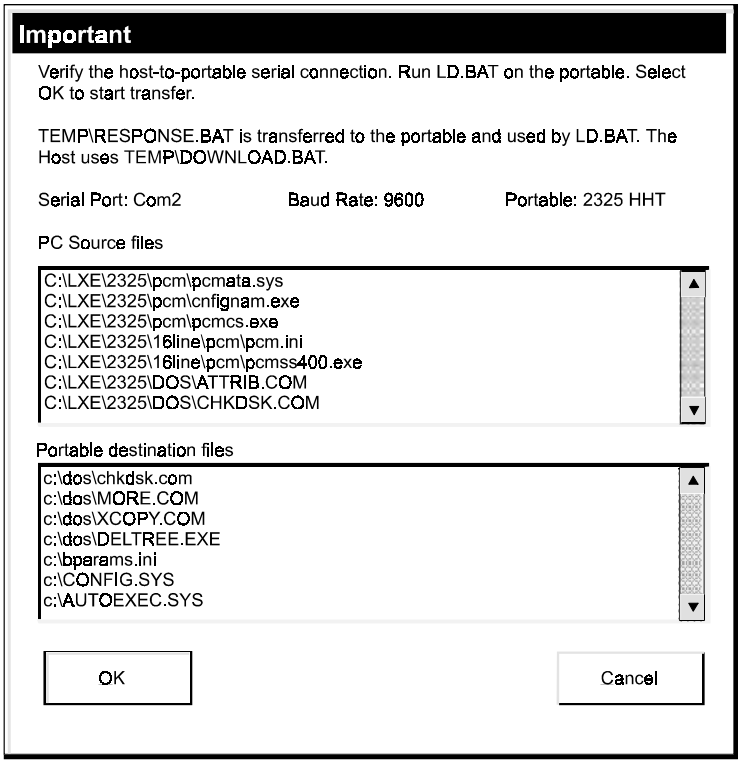

Figure 4-26 Example - PC Sending Files to 2325

The configuration utility prepares files to be transferred to the 2325 and opens the Important dialog box. Make sure your 2325 unit is properly connected to the serial port specified in the Comm Settings dialog box. Then run the LD.BAT file on the 2325, and select OK in the Important dialog box on the PC.

Done

Select Done when you are finished selecting and transferring files.

You are returned to the Main Menu.

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Chapter 5
Using XFER

Introduction

XFER (XFER.EXE) is a DOS utility that directs the serial transfer of ASCII and binary data between two computers. This chapter provides information for advanced users and system administrators who want to use XFER to transfer files between a 2325 and a PC.

For basic information about XFER and the Xmodem parameter defaults, see Chapter 2 “Using Advanced Features”, section titled “Transferring Files.”

About XFER

XFER supports Xmodem and Zmodem transfers at speeds up to 115200 baud. Modem support is provided via an initialization file that specifies option settings for the modem. Option settings can be specified on the command line or with an environment variable called XFER_ARGS.

XFER supports RTS/CTS handshaking for Xmodem protocol and both XON/ XOFF and RTS/CTS handshaking for Zmodem protocol.

Syntax and Parameters

The command line syntax for XFER is as follows:

```
XFER [/option1 [/option2] . . .] filename(s)
```

You can use a slash (**/**) or a hyphen (**-**) to denote options, and you can use uppercase or lowercase letters for them. Options can be placed before or after filenames on the command line.

Basic options and their defaults are listed and described in the following table. The "Default" column indicates whether the option is used (On) or ignored (Off) if you do not include it in the command line. For options that have two or more possible values, the default value is given.

XFER Parameters

Option	Description	Default	
		Xmodem	Zmodem
filename(s)	Identifies the file to be transferred or received.	None	None
@file	(Zmodem only) Specifies a response file consisting of two or more names of files to be transferred. Replace file with the name of the response file to use.	N/A	None

#	Specifies the communications port to use. Replace the # symbol with the desired setting:
	1 = COM1
	2 = COM2
		1	1

B#	Specifies the baud rate. Replace the # symbol with the desired setting: 2400 4800 9600 19200 38400 57600 115200	19200	19200

Option	Description	Default	
		Xmodem	Zmodem

C#	(Zmodem only) Specifies how the retransmission of a file should be handled if a previous transfer was interrupted. Replace the # symbol with the desired setting:
	1 = Never recover (start transmission from the beginning of the file)
	2 = Follow sender (use the sender's crash-recovery options; ignore the receiver's)
	3 = Always recover (send data from the point where transmission was interrupted)
		N/A	1

D#	Specifies the number of seconds for XFER to wait for activity before cancelling the transfer. Replace the # symbol with the desired number of seconds for the timeout delay. Acceptable values are 0 (no timeout) through 65,535.	60	60
E#	Specifies the maximum number of times XFER should attempt retransmission of a packet after an error occurs. If the final attempt fails, XFER aborts the transfer. Replace the # symbol with the desired maximum number of attempts. A setting of 0 allows for unlimited attempts.	0	30

F#	Specifies the type of flow control to use for data transfer. Replace the # symbol with the desired setting:
	0 = No flow control
	1 = XON/ XOFF (Zmodem only)
	2 = RTS/ CTS
		0	2

H or ?	Displays help for the XFER command.	None	None
Ifile	Specifies the modem-initialization file. Replace file with the name of the file to use.	modem.ini	modem.ini

Mcommand	Sends a command to the modem before beginning the data transfer. Replace command with one of the following:
	A = Auto answer
	ATstr = Send ATstr commands
	D#x = Dial memory #x (0–9)
	Dstr = Dial phone number str
		None	None

N	Forces XFER to ignore all previously specified option settings, including filenames and options specified in the XFER_ARGS environment variable. All XFER options are set to their default state.	Off	Off

Option	Description	Default	
		Xmodem	Zmodem

O#	Overwrites an existing file with a new file having the same name. Replace the # symbol with the desired setting:
	1 = Overwrite if source is longer or newer (Zmodem only)
	2 = Overwrite if CRCs don't match (Zmodem only)
	3 = Append to existing file (Zmodem only)
	4 = Always overwrite
	5 = Overwrite if source is newer (Zmodem only)
	6 = Overwrite if dates or lengths don't match (Zmodem only)
	7 = Never overwrite
		7	7

Q	Toggles quiet mode on and off. In quiet mode, only the filename and a "Transmitting..." or "Receiving..." message is displayed. When quiet mode is off, additional information is displayed. Each use of this option reverses the quiet-mode state.	Off	Off
R	Receives the specified file or files.	Off	On if no file is specified

S#	(Zmodem only) Specifies how paths and names should be handled when sending files. Replace the # symbol with the desired setting:
	0 = Strip paths
	1 = Send paths
	2 = Send new paths/filenames
		N/A	0

T	Transmits the specified file or files.	On	On if file is specified
W#	Window size (Zmodem only): x = Packet size, in bytes 0 = Streaming	N/A	0
X	Uses Xmodem protocol for the transfer.		
Z	Uses Zmodem protocol for the transfer.		

filename(s)

Name(s) of the File(s) to Send or Receive

Xmodem

Only one file can be transferred at a time. You can specify the entire path, including the drive letter. If you do not specify a path, the file is sent from or received into the current directory. If the directory or file doesn't exist on a send, or the directory doesn't exist on a receive, the transfer will fail, with a file-open error.

You must include the filename on the command line when receiving a file. If multiple files are specified for Xmodem, only the first file will be transferred. All other file names will be ignored.

Zmodem

Zmodem allows up to 256 files to be transferred in one session. You can specify the entire path for each file, including the drive letter. If you do not specify a path, the file is sent from or received into the current directory. If the directory or the file doesn't exist on a send, or the directory doesn't exist on a receive, the transfer will fail, with a file-open error. DOS accepts only 128 characters on the command line, but you can use a response file to get around this limitation. (See the @file option.)

When receiving, the filename does not need to be specified for Zmodem. Zmodem transfers the name of the file to be sent before sending the file. (See the S option for information on controlling how Zmodem sends the filename.) Any filename specified on the receiving end will override the default name that is sent by the sender.

When multiple files are sent, a one-to-one correspondence is established. For example, if ten filenames are specified on the sender's side and five filenames are specified on the receiver's side, the first five files transferred will be received with the names specified on the receiver's command line, while the last five files will be received with the names specified on the sender's command line (assuming all the files exist). Each filename on the command line can include its own path.

XFER also recognizes the wildcard characters ? and *. Normal DOS pattern-matching rules for these characters apply.

Be careful about using wildcards when receiving: XFER expands the wildcards of the specified filenames and then searches for any matching patterns in the specified directory. If no matching files are found (in an empty directory, for instance), then no filenames will be sent to the Zmodem receive procedures. This may or may not be what you intend.

Also, DOS does not store files in alphabetical order, and so using *.* to both send and receive files may result in files being renamed because they are loaded in a different order. This can occur even if the file lists on both sides of the transfer are the same.

@file

Response File (Zmodem only)

The @file option allows use of a "response file" for specifying filenames when conducting Zmodem transfers. This option allows you to circumvent the DOS limitation of 128 characters on the command line when you want to send many files in a single transfer session.

When using a response file, simply fill the file with the filenames you wish to send or receive. The filenames may include drives and paths. One filename should appear on each line of the response file. You can specify up to 256 files this way.

The following is a sample response file, named RESPONSE.TXT:

```
autoexec.bat
c:\programs\theprog.exe
c:\data\file1.dat
c:\data\file2.dat
c:\data\file3.dat
```

Not all the filenames need to be specified in the response file. For example, the following command would send seven files, including the five in RESPONSE.TXT above.

```
Xfer /z c:\default\config.sys /@response.txt
c:\data\file4.dat
```

In this case, each filename is read in as it appears on the command line. The file C:\DEFAULT\CONFIG.SYS would be the first one sent, the AUTOEXEC.BAT file specified in the RESPONSE.TXT file would be the second file sent, and the C:\DATA\FILE4.DAT file specified on the command line would be the seventh file sent.

You can specify multiple response files. Regardless of the number of response files you use, the 256-file limitation for a single transfer session is always in effect.

If you include a response file in the XFER_ARGS environment variable, you can use the N option to ignore the response file and start from a default condition.

You can use response files with the S2 option. In this case, the format for the response file would be:

```
autoexec.bat c:\autoexec.bat
c:\programs\theprog.exe c:\prog.exe
c:\data\file1.dat d:\data1
c:\data\file2.dat d:\data2
c:\data\file3.dat d:\data3
```

In this case, the first filename on a line specifies the file on the sender's side. The second filename on the line specifies the filename the sender will pass to the receiver.

Note: The receiver's filename is separated from the sender's filename by a single space. If more than one space is used, the additional spaces will be included as part of the receiver's filename. Because a space character is used as a delimiter, Windows 95 and Windows NT filenames with spaces as part of the filename will not be parsed correctly and should not be used. Placing quotes around the filename will not help in this situation.

The @file option can be used only in Zmodem transfers. You must specify the Z option before the @file option. If you use a response file with the S2 option, you must specify the S2 option before the @file option.

All other rules governing filenames apply to response files.

#

COM Port

This option specifies the communications port to use for the file transfer. Replace the # symbol with the desired setting:

1 = COM1
2 = COM2

B#

Baud Rate

This option specifies the baud rate to be used for the file transfer. Replace the # symbol with the desired setting:

2400
4800
9600
19200
38400
57600
115200

C#

Crash Recovery (Zmodem only)

Crash recovery refers to the ability of Zmodem protocol to detect that a file transfer was not completed and to attempt to recover at the point of failure (instead of recopying the entire file). For instance, if the communications link is severed during the transfer of a 10K file, with only 5K of data successfully transferred, crash recovery can be used to send the remaining 5K without resending the entire 10K file.

Note: This option is supported by Zmodem protocol only. Xmodem will never attempt to recover a file after a crash.

Crash recovery uses the CRC of the sender's and receiver's files to ensure that the portion of the file that was successfully received in the first transfer is identical to that portion of the sender's copy of the file. If this is true, then the receiver instructs the sender to begin sending data beginning at the point in the file that corresponds to the end of the file on the receiver's side.

By default, crash recovery is turned off. To use the C option, replace the # symbol with the desired setting:

1 - No crash recovery
2 - Follow sender
3 - Always use crash recovery

If you use the C option without including a number, then the 1 setting is assumed. An invalid setting will result in an error on the command line.

The C option can be used in conjunction with the O option. If you specify C2 (follow sender) on the command line, the receiver will use

the sender's crash and overwrite options. Any overwrite options local to the receiver will be ignored. This is useful if a default crash-recovery command is specified in the XFER_ARGS environment variable and you wish to temporarily disable crash recovery for the current transfer.

D#

Delay Before Terminating Transmission

This option allows you to specify a timeout. If the specified number of seconds elapse with no characters received by either the sender or the receiver, the program aborts the transfer session.

For multiple file transfers in Zmodem, the entire session is aborted, not just the transfer of the current file.

To use the D option, replace the # symbol with the desired number of seconds for the timeout delay.

Acceptable values are 0 (no timeout) through 65,535; the default is 60. A value of 0 disables the timeout feature, meaning that the transfer session will never be aborted because of inactivity. If you use the D option without specifying a number, an error will occur.

E#

Maximum Number of Errors Before Aborting Transfer

The E option allows you to specify the maximum number of times the receiver will request a retransmission of a packet before aborting the transfer session.

Note: For multiple file transfers in Zmodem, the entire session is aborted, not just the transfer of the current file.

For Xmodem, the default is 0, meaning that Xmodem will never be aborted because of errors. For Zmodem, the default is 30. A setting of 0 disables the error-count tracking. If you use the E option without specifying a number, an error will occur.

F#

Flow Control

This option allows you to specify what type of flow control to use for the file transfer.

Flow control is the ability of the receiver to detect that data is coming in faster then it can receive it and to issue a command to the sender instructing it to stop sending data. When the receiver is again able to handle new data, it issues another command instructing the sender to resume the transfer of data.

XFER supports two types of flow control: software (XON/XOFF) and hardware (RTS/CTS). Only one type can be used at a time. The sender and receiver should have this option enabled similarly.

To use the F option, replace the # symbol with the desired setting:

0 - No flow control

1 - XON/ XOFF (Zmodem only)

2 - RTS/ CTS

Note: XON/XOFF cannot be used with Xmodem protocol, because Xmodem protocol sends raw binary data and cannot distinguish between the XON/XOFF characters and file data. Attempting to specify XON/XOFF with Xmodem protocol will result in an error.

If you do not include the F option in the command line, no flow control is used. If you use the F option without specifying a number, it is assumed to mean F0, or no flow control. This is useful in the case where flow control is specified in the XFER_ARGS environment variable but you wish to turn flow control off for the current transfer session. An invalid setting will result in an error on the command line.

On a 2325, RTS/CTS flow control should be used when transferring with Zmodem, especially if Zmodem is in streaming mode. In streaming mode, the Zmodem sender does not wait for acknowledgments to packets but continuously sends a stream of data. Often this can overwhelm the receiver, especially if it is receiving at high data rates or receiving to the C drive or to a PCMCIA ATA card, which writes data to disk much slower then the D drive.

H or ?

Help

This option displays a brief description of the XFER syntax, options, and settings.

Ifile

Modem-Initialization File

This option specifies the file that contains modem setup and control commands. See "The Modem Initialization File" for complete information about the file.

Mcommand

Modem Command

This option allows commands to be sent to the modem before the start of the file transfer. To use the M option, replace command with one of the following commands:

A = Auto answer
ATstr = Send ATstr commands
D#x = Dial memory #x (0–9)
Dstr = Dial phone number str

Specifying XFER /MA instructs the modem to go into auto-answer mode. In this mode the modem will wait for the timeout period specified in the modem-initialization file for another modem to dial into it. On detection of a ring-in signal, XFER will answer the line and attempt to start a file transfer.

Specifying XFER /MATstr allows a string of AT commands to be sent to the modem. These commands will be sent to the modem after the initialization string from the modem-initialization file and can be used to specify a different configuration. Since only one modem command can be specified on the command line, any commands to auto-answer or dial must be included in the AT string.

There are two methods for dialing numbers. The first method uses the format XFER /MD#x, where x is a number from 0 through 9. This number corresponds to a directory number from the modem-initialization file, which identifies a number that should be dialed for this transfer (see the NUMBER# keyword later in this chapter). If you do not specify a number, directory number 0 is used.

The second dialing method is to use the XFER /MDstr format, where str is a dialing command to be sent directly to the modem. This string can be any recognizable phone number text, such as (555) 444-3333 or 5554443333.

The last M option on the command line or in the environment variable is the one used for controlling the modem. All earlier modem-command settings are ignored.

If you use the M option without specifying a command, the modem will be disabled for that transfer session. This is useful in the case where modem commands are specified in the XFER_ARGS environment variable but you wish to transfer files without a modem for the current transfer session.

N

Ignore Previous Option Settings

This option causes XFER to ignore previously specified options and return to a default state. All options specified in the XFER_ARGS parameter and on the command line preceding the N are ignored. All options that XFER supports are returned to the default state, and all filenames, response files, modem-initialization files, and modem commands that are specified before the N (including the XFER_ ARGS environment variable) are discarded.

The N option is useful when the XFER_ARGS environment variable is used to redefine defaults for XFER. It isn't always obvious that the XFER_ARGS parameter is controlling the behavior of XFER, and it is often the case that several parameters have been redefined. Instead of having to set each option back to its default, you can use the N option to return XFER to a known state.

O#

Overwrite Existing File(s)

The O option specifies what action the receiver should take if the file being transferred already exists on the receiver's side. When using this option, replace the # symbol with the desired setting:

1 - Overwrite if source is longer or newer
2 - Overwrite if CRCs don't match
3 - Append to existing file
4 - Always overwrite
5 - Overwrite if source is newer
6 - Overwrite if dates or lengths don't match
7 - Never overwrite

By default, XFER operates in O7 mode—existing files are never overwritten. For Xmodem, the only valid options are O4 and O7; all other settings resolve to O7 (never overwrite). All settings for the O option are available with Zmodem protocol.

To remain compatible with previous versions of XFER, the O option used without a setting resolves to the O4 setting (always overwrite). This differs from most other XFER options, where specifying the option without a setting usually resolves to the default condition for that option. To use the default condition for the O option, you must specify the O7 setting.

An invalid setting will result in an error on the command line.

Note: XFER does not prompt you to specify whether a file should be overwritten in the default mode. If no overwrite option is specified, the file will never be overwritten. Under Xmodem, the session will abort. Under Zmodem, the file will be skipped and the next file will be transferred.

For the O6 setting under Zmodem, XFER does not set the date or time of a received file to match the original date or time of the sender's version of the file. Instead, the date and time are taken from the receiver's operating system when the file is received and created. Because of this, it is highly unlikely that a file transferred with XFER will have the exact date of the original file. Since the resolution of times for files under DOS is in two-second increments, it is unlikely the timestamps will be the same, even if the times on the receiver and sender are calibrated frequently. Also, DOS doesn't report the seconds field when displaying the modification time of a file during a file listing. So, two files may appear to have the same timestamp when in fact they don't. The

tendency with the O6 option is for files to be overwritten, because times usually do not match exactly.

The O3 setting is unique in that it causes the transferred file (binary or ASCII) to be appended to the end of the old file rather than overwriting it.

With Zmodem, the O option can be used with the C option setting for crash recovery. If you specify C2 (follow sender) on the command line, then the receiver will use the sender's crash and overwrite options. Any options local to the receiver will be ignored.

Q

Quiet Mode

This option toggles quiet mode. When quiet mode is enabled, minimal information is displayed about the file transfer in progress. Generally, only the name of the file being transmitted is displayed. When not in quiet mode, XFER will display a copyright message, the filename, and file statistics, including a running count of bytes.

Running XFER in quiet mode on the 2325 can have serious consequences for serial-transfer performance, especially at high speeds. At 115200 baud, transfers are four times faster if quiet mode is enabled on the 2325 than if it is disabled, owing to the delay inherent to writing a running byte count to the screen.

Since the Q option is a toggle switch, each occurrence of it in the command line inverts the quiet-mode state. By default, XFER has quiet mode off. The first occurrence of the Q option turns quiet mode on, the next turns it back off, and so on. This is most useful if the option is specified in the XFER_ARGS environment variable to activate quiet mode by default but you wish to deactivate quiet mode for the current transfer session.

R

Receive File(s)

This option specifies that files are to be received. With Xmodem protocol, the option must be specified whenever you wish to receive a file. The option can be included in the XFER_ARGS environment variable, forcing Xmodem protocol to default to receiving instead of sending files.

With Zmodem, receive is the default if no file is specified on the command line (for example, XFER /z). The name of the file is sent by the transmitting side before the file is transferred, and the file is received with that path and name. If you wish to receive a file under Zmodem with a different name from the sender's original filename, you can use the R option to force Zmodem into receive mode and then specify a filename. (See the "filename(s)" option for information on specifying filenames.) Using the R option without a filename is the same as not using the option at all—the sender's filename (and path) is used.

Note: The last transfer option, R or T, on the command line controls whether to transmit or receive for the session.

S

Specify Sender's Path-and-File Handling (Zmodem only)

The S option controls how the sender handles the paths and filenames of the files that it sends. This option is available only with Zmodem protocol. You must specify the Z option before using the S option. You can use one of the following settings. The settings are described individually below.

0 - Strip paths
1 - Send paths
2 - Send new paths/filenames

If you do not include the S option in the command line, the default setting (0) is used. If you use the S option without specifying a setting (for example, XFER /S), it is assumed to mean S0. This is useful in the case where another option is specified in the XFER_ARGS environment variable but you wish to strip the paths for the current transfer session.

An invalid setting will result in an error on the command line.

0 - Strip Paths

In this mode (the default), the sender will remove any paths that are specified with a filename before sending the filename to the receiver. The new filename will be transmitted to the receiver without any path information. The file will be stored by the receiver in the current directory.

1 - Send Paths

This option performs no processing on the filenames specified on the sender's side. Any drive and path information that is specified is transmitted to the receiver. If a path is specified and it does not exist on the receiver's side, the transfer will abort with a failure.

2 - Send New Paths/Filenames

When the S2 setting is used, all filenames are treated as filename pairs. This gives you the ability to specify dual filenames during a transfer. The first filename (optionally including a drive and path) is the one that the sender uses to open the file. The second filename is used by the sender when it transmits the filename to the receiver. This gives you the ability to transfer a file and have it renamed on the receiver's side. It also lets you transfer a file from one directory on the sender's side to another directory on the receiver's side.

You may specify multiple filename pairs, which may be separated by other XFER options.

You must observe the following conventions when using the S2 option. Failure to conform may result in errors.

- You must specify the S2 command ahead of any filenames.
- When specifying dual filenames, you must separate the filenames by a single space. The first filename in the pair is what the sender uses, and the second filename is what the sender will transmit to the receiver. If you use more than one space, all spaces after the first will be included as part of the receiver's filename.
- You may specify drive and path components for either filename in a pair. However, you cannot specify just a drive and path; that is, the actual name of the file must be included in both filenames.

Correct examples:

```
C:\> xfer /zs2 file1 file2
C:\> xfer /zs2 c:\data\file1 d:\file2
C:\> xfer /zs2 c:\data\file1 d:\file1 c:\yourfile myfile
C:\> xfer /zs2 file1 data1 /b115200 file2 data2
```

Incorrect examples:

```
C:\> xfer /zs2 file1 /b115200 file2
C:\> xfer /zs2 file1        file2
C:\> xfer /zs2 file1[TAB]file2
C:\> xfer /z file1file2 /s2
C:\> xfer /zs2 file1d:\
```

In the second incorrect example, the additional spaces would be included in the receiver's filename. This is generally wrong, but it may be correct if that is the intended result. The third incorrect example is invalid because the filenames must be separated by a single space; no other white-space character can be used. This mistake most often occurs when using response files (see @file).

Note: If a filename is specified on the receiver's side, that filename will override whatever filename the sender transmits to the receiver.

T

Transmit File(s)

This option specifies that files are to be sent. For Xmodem protocol, this is the default; that is, typing XFER MYFILE on the command line would send the file MYFILE.

For Zmodem protocol, transmit is the default if you specify a file on the command line. So, for example, the command XFER /Z MYFILE is equivalent to the command XFER /Z /T MYFILE.

The T option is most useful if the XFER_ARGS environment variable includes the R command but you want to send a file.

Note: The last transfer option, R or T, on the command line controls whether to transmit or receive for the session.

W

Window Size (Zmodem only)

This option controls the use of windowing with Zmodem protocol. By default, Zmodem is a streaming protocol, and windowing is disabled. “Streaming” refers to the method by which Zmodem transfers data. In streaming mode, the sender forms 1K data packets and sends one packet after another in a continuous stream. The sender does not wait, and does not expect, to get acknowledgments from the receiver for any of the packets it sends. Instead, the sender assumes the file transfer is going normally unless it gets an error indication from the receiver.

This works fine in robust, error-free environments. But the receiver can get lost or disconnected without the sender realizing it. Windowing provides a way in noisy environments to give some level of packet acknowledgment to Zmodem protocol. With windowing, the sender will send up to the number of bytes specified by the size of the window and then stop transmitting data until the receiver acknowledges that it has received all of the packets that have been sent. The sender then sends more packets, up to the size of the window, and so on.

Waiting for acknowledgments slows down transfer speeds, but XFER allows a dynamic compromise between speed and robustness. XFER lets you specify the window size with any value from 0 to 65535. Use W0 for streaming mode. For a 1K window, use W1024. Values below 1024 are used exactly as specified and should be the size of the transmitted packets. Values above 1024 should be multiples of 1024 (1024, 2048, 4096, etc.). Values above 1024 that are not multiples of 1024 are rounded up to the nearest multiple of 1024.

If you do not include the W option on the command line, streaming is used. If you use the option without specifying a setting, W0 (streaming) is used by default. This is useful in the case where a window size is specified in the XFER_ARGS environment variable but you wish to use streaming for the current transfer session.

Note: Always place the W option after the Z option, or a parsing error will occur. See the information about the Z option for more details.

X

Xmodem Transfer

The X option instructs XFER to transfer all files in that session using Xmodem protocol. Because this is the default file-transfer protocol, it does not normally need to be specified.

Z

Zmodem Transfer

The Z option instructs XFER to transfer all files in that session using Zmodem protocol. The Z option should come before all other options that are valid for Zmodem only (such as the C option). This is required because Xmodem is the default protocol for XFER, and option parsing will fail if an illegal setting is specified under Xmodem.

In addition, specifying the Z option resets the Zmodem window size for that session, making it necessary for the Z option to come before any use of the W option.

Note: The last protocol option in the command line specifies the protocol that will be used for the file transfer; that is, Xmodem would be used for the transfer ordered by XFER /Z /X myfile, and Zmodem would be used for the transfer ordered by XFER /X /Z myfile.

The XFER_ARGS Environment Variable

XFER recognizes the environment variable XFER_ARGS. This variable can be used to set option settings that you want for most transfer sessions. You can even specify files in the XFER_ARGS environment. Parsing of the XFER command line starts with the XFER_ARGS variable and then continues through any other specified options or filenames.

You can use a single slash or hyphen to merge multiple options in the XFER_ARGS variable, or you can use a slash or hyphen for each option. The following example illustrates both cases:

```
C:\> set XFER_ARGS = /ZROB57600
C:\> set XFER_ARGS = /Z /R /O /B57600
```

For each command line in the example, files will be received (option R) using Zmodem protocol (Z) and a baud rate (B) of 57600 baud, and existing files will always be overwritten (O).

Note: You can use up to ten slashes or hyphens for options in the environment variable. See the following section, "Multiple-Option Blocks" for more details.

Any of the parameters used in the example could be overwritten on the command line. For example, if you issued the following command:

```
C:\> xfer /x myfile
```

XFER would use Xmodem for the file transfer instead of Zmodem, while still using the other option settings specified in the XFER_ ARGS variable.

There are two precautions for mixing options in the environment variable with options on the command line. The first is about options that are supported by Zmodem protocol only. In the following example:

```
C:\> set XFER_ARGS = /z /w4096 /c3
C:\> xfer /x myfile
```

the environment variable is set up to use Zmodem with a 4K window and crash recovery turned on. In the XFER command line, Xmodem protocol is specified. Since Xmodem doesn't support windows or crash recovery, both those options are ignored. Another, more troublesome scenario is the following:

```
C:\> set XFER_ARGS = /z /o5
C:\> xfer /x myfile
```

Here, XFER is set to Zmodem in the environment variable, with an overwrite setting of 5 (overwrite if source is newer). However, in the

XFER command line, Xmodem protocol is specified. The only overwrite settings that Xmodem supports are O4 (always overwrite) and O7 (never overwrite); all other O options resolve to O7 for Xmodem. If the file myfile exists, the transfer will abort. In this case, you should either specify O4 on the command line or not use the X option.

Note: If a filename is included in the XFER_ARGS environment variable, that file will always be the first file sent or received. You can negate it only by specifying the N option on the command line. For this reason, you should generally not include filenames in the environment variable.

Multiple-Option Blocks

XFER supports multiple options after a single slash (/) or hyphen (-) on the command line and in the XFER_ARGS environment variable. Each of the following examples is a valid command line:

```
C:\> xfer /zrob115200 myfile
C:\> xfer /zro /d30 /b115200 myfile
C:\> xfer /zrw2 /o5c3f2 myfile
```

Any option can immediately follow another without a separate delimiter (/ or -) unless the preceding option has a multicharacter setting. The following options have multicharacter settings:

- B (baud rate)
- D (timeout)
- E (error count)
- I (modem-initialization file)
- M (modem command)

The setting for each of these options must be followed by a space. Except for the I and M options, the option is ignored during parsing if there is no space following its setting. For the I option, any extra characters directly following the initialization-file filename will be treated as part of the filename. Any extra characters following the M option will be treated as part of the modem command; this may produce modem-command syntax errors.

Correct examples:

```
C:\> xfer /zrob115200 myfile
C:\> xfer /zo5c3f2b115200 myfile
C:\> xfer /z /mA myfile
```

The first two command lines above are valid because the /b115200 setting is always at the end of the multiple-option block. Also in the second example, the O, C, and F options all have single-digit settings.

Incorrect examples:

```
C:\> xfer /zb115200ro myfile
C:\> xfer /z /mAro6 myfile
```

In the first command line above, XFER would load and run. However, the R and O options would not be detected, because the b115200 setting

is not followed by a space. Therefore, XFER would try to send the file myfile, not receive it. The second example is wrong because the R and O6 parameters would be included as part of the modem command A.

Be careful when specifying the COM port in a multiple-option block. For example, the following command:

```
C:\> xfer /zo2 myfile
```

sets the overwrite option to 2 (overwrite if CRCs don't match) but doesn't cause XFER to use COM port 2. The following commands could be used to do this:

```
C:\> xfer /z2o myfile
C:\> xfer /z2o2 myfile
C:\> xfer /zo22 myfile
```

In the last example, the first 2 is treated as the setting for the O, and the second 2 is parsed as the COM port to use for the transfer.

The Modem-Initialization File

The modem-initialization file (MODEM.INI) contains keyword-and-value pairs, with each pair on a separate line. Each keyword is separated from its value by one or more spaces; tabs and other white-space characters are not valid. Keywords can be in any order within the file.

Lines beginning with a # character or with a space character are treated as comment lines and are ignored. The # character can also be used to embed comments within a line. Any characters after a # character in a line are ignored for that line.

Note: Individual lines cannot exceed 128 characters in length, including comments, or errors in parsing may occur.

Keywords

ACCESS_DELAY

This keyword specifies the number of milliseconds for XFER to wait for a response from the local modem when sending a command to the local modem. The default is 2000 ms (2 seconds).

CARRIER_TIMEOUT

This keyword specifies the number of seconds for XFER to wait for a carrier signal from the remote end before timing out. The default is 60 seconds.

COMPRESSION_STRINGS

This keyword specifies a list of response strings (expected responses from the modem) that indicate that a connection was made using data compression. Because modems often support various types of data compression, they may have more than one string indicating that compression is taking place. You can use the COMPRESSION_ STRING keyword as many times as necessary to create the desired list. However, the combined length of all the values assigned to COMPRESSION_STRING cannot exceed 115 characters.

DIAL_METHOD

This keyword specifies how the modem attempts to dial phone numbers. This can be T for tone dial or P for pulse dial.

ECHO

This keyword indicates whether responses received from the modem should be displayed to the screen. Enable the keyword by setting the value string to T (for true); clear it by setting the value string to F (for false).

FAIL_STRINGS

This keyword is a list of response strings (expected responses from the modem) that indicate that the connection to the remote end failed. These strings contain text (such as NO CARRIER and BUSY) that the modem might return on an error. Using a configurable list of errors allows the serial-in/out modem run-time library to compensate for differences in messages between individual modems. You can use the FAIL_STRING keyword as many times as necessary to create the desired list. However, the combined length of all the values assigned to FAIL_STRING cannot exceed 115 characters.

HANDSHAKING

This keyword controls the type of handshaking the 2325 will perform with the modem. Generally, RTS/CTS handshaking is necessary to support the advanced functions of modems, such as compression and error-correcting protocols.

You can set this keyword to N for no handshaking, X for Xon/Xoff software flow control, or R for RTS/CTS hardware handshaking.

Note: The HANDSHAKING keyword in the modem-initialization file takes precedence over any flow-control options selected on the command line in XFER.

INIT_STRING

This keyword specifies the string to use to initialize the modem. The initialization-string value should begin with the AT sequence for Hayes-compatible modems, as the serial in/out modem routines do not attach these characters to the beginning of the initialization string before sending it to the modem.

LOCKED_BAUDRATE

When enabled, this keyword indicates that the local modem is configured to communicate with the PC at a fixed baud rate, regardless of the speed of the connection between the modem and the remote end. This is the normal state of affairs for any modem that supports either data compression or error-correcting protocols. Having this keyword enabled implies that the modem is using hardware handshaking.

The baud rate used for a file transfer will be the baud rate set for XFER by the B option (the default is 19200 baud). If the B option is not set, the baud rate used is whatever the modem indicates it is using in the CONNECT message after connecting to the remote end.

Enable this keyword by setting the value string to T (for true). Clear it by setting the value string to F (for false).

NUMBER#

The NUMBER# keyword specifies a user-defined phone number. The value string can be any sequence of characters that defines a valid number for the modem to dial. Up to ten phone numbers may be specified, with each one assigned a keyword NUMBER0 through NUMBER9. Any number may be assigned to a keyword (unless the number has already been assigned). You do not need to define all ten NUMBER# keywords, and they do not need to be defined in numerical order.

See the Mcommand section for information on how to access the NUMBER# strings to dial when using XFER.

PROTOCOL_STRINGS

This keyword is a list of response strings (expected responses from the modem) that indicate that a connection was made using an error-correcting protocol. Since modems often support various error-correcting protocols, they may have more than one string indicating that such a protocol is being used. You can use the PROTOCOL_STRING keyword as many times as necessary to create the desired list. However, the combined length of all the values assigned to PROTOCOL_STRING cannot exceed 115 characters.

Sample Modem- Initialization File

```
INIT_STRING     ATE1Q0V1X4&C1&D2S7=10s9=6s10=20S1
                1=55S0=2
FAIL_STRING     NO CARRIER
FAIL_STRING     ERROR
FAIL_STRING     NO DIALTONE
FAIL_STRING     BUSY
FAIL_STRING     NO ANSWER
# This is a comment.
  So is this.
COMPRESSION_STRING      CLASS 5
COMPRESSION_STRING      V.42BIS
PROTOCOL_STRIN          LAPM
PROTOCOL_STRIN          ALT
DIAL_METHOD             T     # (T)ONE or
                              (P)ULSE dialing
CARRIER_TIMEOUT         60
ACCESS_DELAY            2000
LOCKED_BAUDRATE         T     # (T)RUE or
                              (F)ALSE
ECHO                    T     # (T)RUE or
                              (F)ALSE
HANDSHAKING             R     # (R)TSCTS,
                              (X)ONXOFF, or
                              (N)ONE
NUMBER0                 9 555-1234
NUMBER9                 (111) 555-9999
NUMBER5                 (111) 555-7777
NUMBER1                 9 555-4321
```

Note: The keywords are all case-sensitive and must be capitalized. For the FAIL_STRINGS, COMPRESSION_STRINGS, and PROTOCOL_ STRINGS settings, the value string should also be capitalized. Any responses from the modem are converted to capital letters before being compared with the various substrings.

Performance

This section describes issues relating to serial performance on the 2325. Although these issues are described in the context of XFER, they apply to serial transfers in general.

File-transfer speed is severely reduced when byte counts are displayed on the 2325 screen. Use the Q option in XFER to enable quiet mode and speed up transfers.

Performance also is diminished when data is transferred to the C drive or to a PCMCIA ATA card. Both of these devices write data to the disk very slowly. Problems may arise as the disks become full and loading algorithms are executed to clean up space for new data. This can become particularly severe with Zmodem in streaming protocol, because the sender never waits for the receiver to write data to the disk. To avoid this problem, use Zmodem with either windowing or flow control enabled. Flow control is generally faster and permits the receiver to operate at its peak capacity.

Another factor in performance is the presence of other software running in the background. Card and socket services, for instance, use the timer interrupt for certain functions. Because card and socket services chain into this interrupt and execute some code with interrupts disabled, the system may become overburdened when running serial interrupts at high speed (greater than 19200 baud). In this case, overrun, parity, and framing errors become more common, sometimes resulting in an inability to send a file efficiently. If this occurs, select a lower baud rate and enable flow control.

Error Codes

The following table lists error codes returned by XFER.

Value	Mnemonic	Description
0	OK	All files transferred OK.
1	ABORT_FILESSKIPPED	One or more files were skipped during a multiple file download.
2	ABORT_TIMEOUT	The transfer was aborted because of a timeout.
3	ABORT_KEYPRESS	The abort key (ESC) was pressed.
4	ABORT_LINEERROR	A communications line error (e.g., OVERRUN) occurred.
5	ABORT_FILEERROR	A read, write, open, close, or access error occurred on a file.
6	ABORT_FTPERROR	An invalid file-transfer protocol option was selected.
7	ABORT_CHECKERROR	A checksum or CRC error occurred.
8	ABORT_MEMORYERROR	An error occurred while trying to allocate memory from the heap.
9	ABORT_RECEIVERERROR	The receiver encountered a problem and requested to skip the file.
10	ABORT_COMERROR	An error occurred while opening the COM port.
11	ABORT_ARGERROR	An error in an argument (option setting) occurred on the command line.
20	ABORT_UNKNOWN	An unknown error occurred.
31	MODEM_ABORT_CONNECTION	XFER could not establish a connection with the remote end.
32	MODEM_ABORT_NORESPONSE	The modem did not respond.
33	MODEM_ABORT_INIFILE	The specified modem-initialization file could not be found.

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Chapter 6
Commands

Introduction

This chapter describes some of the device drivers and utilities that are designed to be run on a 2325 in section titled “System Utilities.” It also includes Datalight ROM-DOS commands that are available in the 2325. ROM-DOS commands that differ from their MS-DOS equivalents are identified and described.

The information in this chapter is taken from Datalight’s “ROM-DOS 6.22 User’s Guide” and is used by permission.

System Utilities

Where applicable, command syntax and parameters are given. Parameters may be supplied using either uppercase or lowercase letters, and the hyphen (-) may be substituted for the forward slash (/).

CFGDEV.SYS

The CFGDEV.SYS file is located on drive **B** of the 2325. When CFGDEV.SYS is loaded by the CONFIG.SYS file on that drive, a logical character-based device called PARAMS is created. This device receives programming strings that modify the configuration parameters that control the behavior of several system components. There are three ways you can send programming strings to the PARAMS device:

Barcode

Special barcode labels beginning with **$+$-** and ending with **EE** can be scanned using any barcode scanning device. Appendix C contains many useful labels.

File Copy

Files containing the barcode programming strings can be created and copied to the PARAMS device. The Configuration Utility creates a file called BPARAMS.INI that contains all of the configuration settings. The autoexec.bat file on the 2325's drive **C** contains the following command:

```
EXIST c:\bparams.ini copy c:\bparams.ini PARAMS
```

which copies the BPARAMS.INI file to PARAMS. You may also create your own file containing configuration settings.

Example: To use the D2 defaults with the **CTL-ALT-DEL** key sequence disabled, complete the following steps:

1. Create a MYPARAMS.INI file with the following text:

   ```
   $+$-D2E00EE
   ```

   D2 sets the D2 defaults, and **E00** disables the **CTL-ALT-DEL** key combination.

2. Copy MYPARAMS.INI to the PARAMS device using the following DOS command:

   ```
   COPY MYPARAMS.INI PARAMS
   ```

Run-Time Library API

The API in the 2325 run-time library contains two function calls that allow you to send configuration strings to the PARAMS driver from within a C application. See **CFG_Write()** and **CFG_Read()** in the "2325 Programmer's Reference."

Note: Attempts to create, delete, or modify a file called params will conflict with the PARAMS device. You cannot eliminate the loading of cfgdev.sys except through the safe-boot process.

CFGIO.EXE

The CFGIO.EXE utility changes the current font set or the current keypad mapping to be used by the system (or both). This is primarily to be used for loading support of alternate keypad overlays and fonts for international use. The new settings will take place only if the font set and keypad mapping are compatible.

Syntax

```
CFGIO [fontfile] [keymap]
```

Options

fontfile

Specifies the name of the file containing the new font set to be loaded into the system. Font files have the extension `fnt`.

keymap

Specifies the name of the file containing the new keypad map to be loaded into the system. Keypad map files have the extension `kbd`.

COMIO.COM

This utility provides an easy means for developers to interact with the 2325 by allowing video and keyboard interaction to be done at a host PC. It does this by controlling redirection of video and keyboard I/O through the portable's serial port COM1. When keyboard redirection is disabled, input is received from the 2325's keypad; when it is enabled, input is taken from the serial port. The same mode of operation applies to video output, which is sent to either the display or out the serial port.

When redirecting video output, keypad input, or both, you must connect the 2325's serial port to a host computer. The host computer should be running a basic terminal emulator that provides a direct connection to the host communications port. The host communications port settings should be: no parity, 8 data bits, 1 stop bit, and the baud rate specified in the comio.com command line. By default, both video and keyboard I/O are redirected, but either one may be changed independently.

Syntax

```
COMIO [/b#] [/h] [/k] [/v]
```

`/b#`

Specifies the baud rate to use. If you do not specify this setting, the current baud rate is used.

`/h`

Displays a help file for the utility.

`/k`

Changes keyboard redirection only.

`/v`

Changes video redirection only.

DECODE.SYS

This driver controls barcode scanning devices and decodes barcode labels into text. If special programming barcodes are read, the decoded information will be sent to the PARAMS device. Otherwise, the resulting text is placed in the keyboard buffer for reading by the application. DECODE.SYS is located on drive `B` of the 2325 and is loaded by the CONFIG.SYS file located on that drive. You cannot eliminate the loading of DECODE.SYS except through the safe-boot process.

FLASHDSK.SYS

This driver configures all of the unit's available flash memory as a read-write disk, called a flash disk. Reading from a flash disk is fast, but writing can be somewhat slower. This driver is located on the B drive and is loaded by the CONFIG.SYS file located on that drive. You cannot eliminate the loading of FLASHDSK.SYS.

FORMAT.COM

This utility formats a read-write disk drive. Only the flash and RAM drives may be formatted using this command. FORMAT.COM uses the existing drive parameters to recreate the drive, but without any files stored on it. This provides a quick method for cleaning out an existing drive.

Syntax

```
FORMAT [drive:] [/y]
```

Options

drive

Specifies the letter of the drive to be formatted. If you do not specify a drive letter, the current drive is used.

/y

Suppresses output from being sent to the display, and bypasses the usual prompt to proceed with formatting.

LOCK.COM

Use this utility to enable or disable write protection on flash or RAM drives. (This is the software equivalent of the write-protect tab on a floppy disk.) You can use LOCK.COM to protect against accidental erasure of all files stored on the flash disk.

Whenever the 2325 is rebooted, write protection on a drive will be disabled, by default. To lock the drive upon bootup, include a `lock` command in the AUTOEXEC.BAT file on drive `C`.

Syntax

```
LOCK [drive:] [/l] [/u] [/y]
```

Options

drive

Specifies the drive letter of the drive which is to be locked or unlocked. If you do not specify a drive letter, the current drive is used.

`/l` (the letter L)

Lock the flash drive to prevent further disk writes.

`/u`

Unlocks the flash drive, allowing further disk writes.

`/y`

Suppresses output from being sent to the display.

Note: If both the /l and /u options are given, the last option specified will take effect.

ORGANIZE.COM

This utility reorganizes sectors on a flash drive to improve flash disk access. Data is relocated so that all free sectors are grouped together, reducing the overhead of freeing space for new data. ORGANIZE.COM has a greater effect on a flash disk as the disk gets closer to being full.

Note: The only 2325 drive you can organize with this utility is the flash disk created with the FLASHDSK.SYS driver. ATA flash drives will not respond properly to this utility.

Syntax

```
ORGANIZE [drive:] [/y]
```

Options

drive

Specifies the drive letter of the flash drive that is to be reorganized. If a drive letter is not given, the current drive will be used.

/y

Suppresses output from being sent to the display.

PM.COM

Use this utility to control various power-management features of the 2325. You can use it at the command line or in a batch file (including AUTOEXEC.BAT) to set or read power-management settings.

Syntax

```
PM [/b#] [/f#] [/h] [/i] [/r] [/t#]
```

Options

/b#

Sets the automatic timeout for the backlight. Replace the # symbol with the number of seconds to wait after a keypress before automatically turning off the backlight. Each keypress restarts the timeout countdown. The range of acceptable values for # is 0 (off) to 255; the default is 15 seconds.

/f#

Sets the time interval for audio indication when the batteries are low. Replace the # symbol with the number of minutes between soundings of the tone. The tone will not sound until the battery has been in the low

state for the same number of minutes. The range of acceptable values for # is `0` (off) to `255`; this option is off by default.

Note: The audio warning uses extra current, causing the batteries to drain faster. Therefore, you might want to set the interval for as long as possible or not use it at all.

`/h`

Displays a help file for the utility.

`/i`

Displays timer settings for auto-off, backlight timeout, and low-battery audio indication.

`/r`

Resets power management to the cold-boot defaults.

`/t#`

Sets the auto-off timeout. Replace the # with the number of seconds of nonuse before the unit should move to its lowest power state. The range of acceptable values for # is `16` to `1032`, or `0` for off; the default is `300` seconds (5 minutes).

VDISK.SYS

This driver configures all of the unit's available extended memory as a read/write disk, called a RAM disk. This driver is located on drive `B` of the 2325 and is loaded by the CONFIG.SYS file located on that drive. You cannot configure the parameters for this driver.

XFER.EXE

The XFER utility gives you the ability to transfer files to and from a PC through the 2325's serial port. For complete information about XFER, see Chapter 5 "Using XFER."

ROM-DOS Commands

This section provides descriptions of the ROM-DOS commands listed in the following “ROM-DOS vs MS-DOS” table. Each entry includes an explanation of the command's purpose, the command entry syntax, remarks, and examples.

Each command also has a label to designate whether it is an internal or external command. Internal commands are part of the command processor program, COMMAND.COM. These functions are available only while COMMAND.COM is running. External commands are actually stand-alone utility programs. They are independent from COMMAND.COM. Internal commands that are unique to CONFIG.SYS processing are also identified. These commands can be used only in a CONFIG.SYS file.

ROM-DOS vs MS-DOS

The following table identifies differences between ROM-DOS commands and their MS-DOS equivalents. For more information, see the individual command descriptions in the next section.

Command	Features Exclusive to ROM-DOS	Features Exclusive to MS-DOS
ATTRIB	-C: Clears all file attributes	/S: Processes files in all subdirectories
BUFFERS		Allows designation of secondary buffer cache
CHKDSK	/C: Corrects errors without user confirmation	
COMMAND	Internal command help only	/Y: Steps through batch file specified by /C or /K switch help.hlp in MS-DOS includes all commands (external and internal), installable drivers, etc.

Command	Features Exclusive to ROM-DOS	Features Exclusive to MS-DOS
DIR	/A X: Shows attributes	/O:C and /O:-C: Sorts by compression ratio /C[H]: Displays compression ratio of files compressed using Drivespace or Doublespace
FCBS	, [minimum number]	
FIND		/I: Not case-sensitive
HELP	Requires command.hlp	MS-DOS requires external file, help.com, but provides more help text
NEWFILE	ALL	Not available with MS-DOS
PRINT	/F: Sets maximum number of files	/D:LPTx (2325 has no parallel port.) /U /M /S /Q
SHARE	/U: Unloads share.exe	/F:space: Allocates space to record
SWITCHES		/W
TREE		/A: Indicates no graphics characters for tree symbols
VER	/R: Shows full version and release number Allows revision of the version number	
XCOPY		/Y /-Y: Turns confirmation prompts on or off
XDEL	All	Not available with MS-DOS Similar to DELTREE

ATTRIB.EXE

Type

External

Purpose

The ATTRIB command either displays or modifies the attribute of a file.

Syntax

```
ATTRIB [+ ¦ -][option][filespec]
```

Remarks

The file attributes define the characteristics of a file. They determine if a file may be deleted or modified, or if it is archived. The ATTRIB command is used to manage these file attributes.

Wildcard characters may be used in the ATTRIB **`filespec`**.

The ATTRIB command will modify file attributes if modify commands are given to ATTRIB. The modify commands are:

Command	Description
+/-	Add(+) or remove(-) attribute
A	Archive attribute
C	Clear all attributes
H	Hidden file attribute
R	Read only attribute
S	System file attribute

If no modify commands are found by ATTRIB, then the files are displayed along with the file names and their current attributes.

Examples

ATTRIB will add the read-only attribute to the file myfile.dat.

```
ATTRIB +r myfile.dat
```

ATTRIB will remove the read-only attribute and the archive attribute for all files with the DAT extension.

```
ATTRIB -a -r *.dat
```

ATTRIB will display the attributes of all files with the DAT extension.

```
ATTRIB *.dat
```

BUFFERS

Type

config.sys

Purpose

ROM-DOS has internal buffers to temporarily hold data read from the disk. Increasing the number of internal buffers will speed system performance.

Syntax

```
BUFFERS = number
```

Remarks

Each buffer used by ROM-DOS requires 512 bytes of RAM. The BUFFERS command will increase or decrease the amount of RAM used by the operating system.

The minimum number of buffers is 2 and the maximum number is 40. If a number less than 2 is given then the number of BUFFERS is set to 2. If a number larger than 40 is given then BUFFERS is set to 40.

Example

The following example causes ROM-DOS to have 10 buffers. These 10 buffers will use 5120 bytes of RAM.

```
BUFFERS = 10
```

CHKDSK.EXE

Type

External

Purpose

The CHKDSK command checks the disk directories and File Allocation Table (FAT) and displays a disk and memory report.

Syntax

```
CHKDSK [d:][path][filespec][/C] [/F] [/V]
```

Remarks

CHKDSK examines a disk and determines if the disk has any errors in the File Allocation Table (FAT) and will optionally fix errors.

Options

The /F option causes CHKDSK to fix errors on the disk if any were found. The errors that can be found are directory or FAT errors. If the /F is not specified then CHKDSK acts as if it will fix the disk, but the corrections will not be written out to the disk.

If errors are detected, you will be prompted with a message similar to the following:

```
15 lost allocation units found in 5 chains.
Convert lost chains to files?
```

If you answer Y for Yes, each lost chain will be written to a file in the root directory of the current default drive. Each file will have the name file*nnnn*.chk. *nnnn* will be a sequential number. The first chain will be in FILE000.CHK. These files can be verified to see if they contain valuable information, and then deleted if desired. Answering N for No to the above prompt, CHKDSK will still make the corrections however the lost chains will not be saved to the disk.

The /C option allows CHKDSK to correct errors without user confirmation. This option must be used along with the /F option for corrections to be made.

The /V option causes CHKDSK to display each path and file as it is processed.

If a file specification is specified, then CHKDSK displays all files matching the specification that have noncontiguous data areas on the disk. Files that are stored in noncontiguous areas, especially .exe files,

have slower disk access times. If CHKDSK reports a large number of files with this problem, a utility program that optimizes the files and free space on your disk should be used.

After checking the disk, CHKDSK displays any error messages followed by a report on the state of the disk that was checked. An example of the report is shown below.

```
Volume ROM-DOS created June 1,1990 1:00a
Volume Serial Number is 190E-4AA2
      362496 bytes total disk space
      0 bytes in 1 hidden files
      6144 bytes in 2 user files
      356352 bytes available on disk
      655360 bytes total memory
      595360 bytes free
```

CHKDSK does not wait for a disk to be inserted before the checking is initiated nor does it repair any errors.

Examples

CHKDSK will check the integrity of drive A. The report will be printed to the console.

```
CHKDSK a:
```

CHKDSK will check the integrity of RAM disk D. The report will be saved in a file called DRIVE_D.RPT.

```
CHKDSK d: >drive_d.rpt
```

COMMAND.COM

Type

External

Purpose

Start a new command processor.

Syntax

```
COMMAND[device][/E:number][/K:filename]
       [/P][/C string][/MSG]
```

Remarks

This command starts a new copy of the ROM-DOS command processor. The command processor is the program that has all the internal DOS commands in it.

Starting a new command processor will also produce a new environment. The size of the environment is 128 bytes by default, but it can be changed using the `/E` switch.

`Command` and its arguments can also be used in a `SHELL=` statement in your config.sys file. See the full description of `SHELL` for more details.

Options

The *device* option specifies that COMMAND.COM should use a different device, such as AUX, for input and output.

The `/E:number` switch sets the environment size. `Number` represents the size of the environment in bytes. `Number` must be in the range from 160 to 32768. All other values will be ignored and the default value of 256 will be used. ROM-DOS will round the value entered up to the nearest multiple of 16.

The `/K:filename` option tells the command processor to run the specified filename and then display the ROM-DOS command prompt. It is not recommended that this option be used in a CONFIG.SYS SHELL= statement.

The `/P` switch causes COMMAND not to exit, or in other words, to remain permanent. The `/P` switch should be used only when command is used in a CONFIG.SYS SHELL statement.

The `/c string` switch causes COMMAND to execute the command in `string` and then terminate. The string command can be any internal or external command.

The `/MSG` option indicates that all error messages should be stored in memory. This option is recommended only for diskette based systems. ROM-DOS keeps many of its error messages in the resident part of COMMAND.COM rather than using valuable memory to store them. If an error message is needed and you have loaded ROM-DOS from a diskette, the message will only be available if the boot disk is still in the drive. By using the `/MSG` option, the messages will be available in memory at all times. The `/P` option must be used along with the `/MSG` option.

Examples

The following command will cause a new copy of COMMAND to be executed. It will perform a `DIR` command on the `C` drive and then exit back to the previous Command Processor.

```
COMMAND /C DIR C:
```

The following example shows loading of a permanent copy of command with an environment size of 256 bytes.

```
SHELL=C:\COMMAND.COM /P /E:256
```

DIR

Type

Internal

Purpose

Displays a list of the files that are in a directory.

Syntax

```
DIR [d:][path][filename][/option]
```

Remarks

The DIR command can be used to list all the files in a directory, or to show the directory entries of specific files. The standard directory display format includes columns for filenames, filename extensions, file sizes, and the dates and times the files were created.

Options

/A *attributes*

The /A option causes the DIR command to display only the files that match the specified filespec and have the given attribute. The table below shows the legal attribute descriptions.

Letter	Description
A	Archive
D	Directories
H	Hidden files
R	Read-only files
S	System files
X	Show attributes

-

The dash (-) symbol can be used to negate listed attributes. For example, to select all files that do not have the archive bit set, use the /A -A option.

/B

The /B, or bare, option causes the display to be displayed without volume label, date, time, or size information.

/L

The /L option causes the filenames to be displayed in lowercase.

/P

The /P option selects page mode, which makes ROM-DOS pause the display each time the screen is full. Press any key to go on to the next page of entries.

/O *attributes*

The /O option causes the filenames to be displayed in sorted order. The sort order can contain one or more of the following letters:

Letter	Description
D	By date and time, newest first
E	Alphabetic order by extension
G	Directories grouped before files
N	Alphabetic order by name
S	Size, smallest first

-

The dash (-) symbol can precede the sort option to reverse the sort order. For example, to sort all files in the directory in reverse alphabetic order, use the /O-N option.

/S

The /S option causes the display to include files in subdirectories also.

/W

Display list in a wide format without date, time, or size.

The DIRCMD environment variable can be used to set the default preferences for the DIR command. The SET command will assign the values to an environment variable. Refer to the SET command section for proper usage. For example, if you wanted to always have the /P option set for DIR, the statement SET DIRCMD=/P could be used. The default settings in DIRCMD can be overridden by using the minus sign (-) preceding the option. If you wanted to cancel the paging for a single use of the DIR command, you would enter DIR /-P.

Examples

To see the directory entries of all files in the current drive and directory, type:

```
DIR
```

To see all files in the subdirectory MEMOS on drive **B**, type:

```
DIR B:\MEMOS
```

Display all files sorted by file name order.

```
DIR /ON
```

Display all hidden files.

```
DIR /AH
```

Display all files with a `.doc` extension, without file sizes, or volume labels.

```
DIR *.DOC /B
```

FCBS

Type

CONFIG.SYS

Purpose

The FCBS command allows you to specify the number of file control blocks (FCBs) open at one time.

Syntax

```
FCBS = number[,minimum number]
```

Remarks

Number specifies the maximum number of FCBs open at any given time. The default for this value is 4. The value for *number* must be in the range from 1 to 255. The minimum number specifies the minimum number of FCBs to be open at all times. The *minimum number* argument has the same default and range value as the number argument.

Example

Set the maximum number of FCBs to 8 and leave at least 4 open at all times.

```
FCBS = 8,4
```

FIND.EXE

Type

External

Purpose

FIND is a filter to display only lines that contain a specified string.

The input to FIND may come from a file, or it may be piped in from another filter or a DOS command.

Syntax

```
FIND [/option] match-string [filename]
```

Options

The /C option causes FIND to only display the count of lines found with the specified string.

The /N option causes FIND to display the line number of the line found containing the string.

The /V option causes FIND to display the lines that do not contain the string.

The match-string argument specifies the word or group of characters to search for.

The filename argument specifies the file or group of files to search in. The complete drive and path can be specified. Wildcard characters can be used in the filename.

Examples

The following example shows each line in the file JUNK.C that contains the string “printf”.

```
FIND printf junk.c
```

The following example shows each line in a directory listing that contains a DIR. The command first executes a DOS DIR command with the output piped into the FIND command. The FIND command then displays each line that contains the string “DIR”.

```
dir ¦ FIND DIR
```

The following example give a count of the lines in the file MANUAL.TXT that contain the string “ROM-DOS”.

```
FIND /C ROM-DOS MANUAL.TXT
.....MANUAL.TXT: 105
```

HELP.COM

Type

Internal

Purpose

Provides on-line help of each ROM-DOS command.

Syntax

```
HELP <command>
```

Remarks

HELP serves as a memory aid. HELP for each command can also be displayed by entering `/?` following the command name.

The file COMMAND.HLP must be available to use this command.

Examples

To list the help of the DIR command you can type:

```
HELP DIR
```

or

```
DIR /?
```

All available batch file commands are also listed by HELP.

NEWFILE

Type

CONFIG.SYS

Purpose

The NEWFILE command allows you to continue CONFIG.SYS file processing from a new file. The file can be located in another directory or even on a different drive.

Syntax

```
NEWFILE=filename
```

Remarks

The NEWFILE command is especially useful when the CONFIG.SYS file is located on an inaccessible drive or in ROM. Additional device drivers or instructions can be added easily to the new file and will be processed along with the main CONFIG.SYS file upon starting the system.

When the NEWFILE= instruction is processed, control will be passed from the present file (the one containing the NEWFILE instruction) to the file specified in the command. Any commands placed after the NEWFILE instruction in the original file will not be processed. If for some reason the specified file name cannot be located, CONFIG.SYS processing will be terminated (even if instructions were to be placed after the NEWFILE command) and the remainder of the startup process will be completed.

NEWFILE commands can be nested. That is, your original CONFIG.SYS can call a second set of instructions via the NEWFILE command. The second file can in turn call a third file by using the NEWFILE command, and so on. Be sure that each filename in the successive steps has a unique name, otherwise, an infinite loop will be created as control is passed back to the same file repeatedly.

Each filename given in a NEWFILE command line will have an environment variable of the same name.

Example

The following example will cause instructions in the file NEWCFG.SYS, located in the C:\BIN directory, to be executed as part of the CONFIG.SYS file. The contents of NEWCFG.SYS may include any of the commands listed in this section.

```
NEWFILE=C:\BIN\NEWCFG.SYS
```

PRINT.EXE

Type

External

Purpose

The PRINT utility prints a single file or a list of files.

Syntax

```
PRINT [/d:] [filename] [/options]
```

Remarks

PRINT allows you to enter between 1 and 32 files for spooling to the printer. The files are output to the device in a spooled manner (while the user performs other operations).

If PRINT is entered without any parameters, then it displays all the files that are in the queue.

The first time PRINT is used the operator is prompted for the device to perform the operation. The following message is used to prompt the operator for the device.

```
Name of list device [PRN]:
```

The legal devices for printing are LPT1, LPT2, LPT3, LPT4, COM1, COM2, COM3, COM4, AUX, or PRN.

Options

The /B option allows the user to set the buffer size. The default buffer size is 512 bytes. A larger buffer size causes print to operate faster. The maximum buffer size is 32k bytes and the minimum size 256 bytes. This option is only allowed the first time PRINT is run.

The /C option cancels only the file names listed after the /C command.

The /F option allows the user to set the maximum number of files to be queued up at one time. The default number of files is 10. The minimum is 2 and the maximum is 32. Support for more files is often useful when using wild cards in file names. This option is only allowed the first time PRINT is run (or until the next system reboot).

The /P option causes all files listed after this option to be submitted for printing. This is the default for filenames encountered on the PRINT command line.

The /T option cancels all the files from the print queue (list). Think of this as a terminator.

The /H option will display the help screen.

Examples

PRINT puts three files into the print queue. The first file will start being printed after the command ends.

```
PRINT FILE1.TXT FILE2.TXT FILE3.TXT
```

The file FILE2.TXT will be removed from the print queue. All other files in the queue will print normally.

```
PRINT /C FILE2.TXT
```

All files in the print queue are canceled. Printing may continue for a short time because of the buffer in your printer.

```
PRINT /T
```

SHARE.EXE

Type

External

Purpose

SHARE installs the capabilities for file-sharing and file-locking on your hard disk.

Syntax

```
SHARE [/options]
```

Or from CONFIG.SYS:

```
INSTALL=[d:][path]SHARE.EXE [/options]
```

Remarks

The SHARE utility is most commonly used in a network or multitasking environment where file sharing is necessary. When SHARE is loaded, DOS will utilize the SHARE utility to validate read and write requests from application programs and users.

The `/L:#` option specifies the maximum number of files that can be locked at one time. The default number of files is 20.

The /U option unloads the share utility and frees the memory. SHARE will not unload if other TSRs have been loaded on top of it. The other TSRs must be unloaded first before trying to unload SHARE.

Examples

The following example loads the SHARE program from the command line:

```
SHARE
```

The next example installs SHARE from the CONFIG.SYS file and changes the maximum number of locked files to 30:

```
INSTALL=C:\UTILS\SHARE.EXE /l:30
```

The final example unloads SHARE and frees the used memory.

```
SHARE /U
```

SWITCHES

Type

CONFIG.SYS

Purpose

The SWITCHES command allows special CONFIG.SYS file options.

Syntax

```
SWITCHES=[/k][/n][/f]
```

Remarks

The /k argument makes an enhanced keyboard behave like a conventional-style keyboard.

The /n argument prevents the use of the `F5` and `F8` function keys to bypass the startup commands.

The /f argument instructs ROM-DOS to skip the delay after displaying the `Starting ROM-DOS...` message at boot time. The delay allows the user time to use the F5 and F8 options to alter the processing of the startup files.

Examples

The following example prevents the user from using the `F5` and `F8` keys at boot time.

```
switches = /n
```

TREE.COM

Type

External

Purpose

The TREE command displays each subdirectory and optionally the files within them for a specified drive.

Syntax

```
TREE [d:] [/F]
```

Remarks

The TREE command displays the full path of each subdirectory on a specified disk.

The *d:* specifies the drive that TREE will display the subdirectories from. This argument must be specified.

Options

The /F switch causes TREE to display the files in each subdirectory.

Examples

This command will display all subdirectories on drive **C**.

```
C:\DATA> TREE C:
```

This command will display all subdirectories on drive **A** along with the files within each subdirectory.

```
C:\DATA> TREE A: /F
```

VER

Type

Internal

Purpose

Displays the version number of ROM-DOS in use. Allows revision of this version number.

Syntax

```
VER [n.nn] [/R]
```

Remarks

If a new version number is specified, two digits after the decimal are required. Note that this command revises only the record of the DOS version number; it does not change the actual operating system loaded in the computer.

The version command shows both the version of the VER command itself and the version of DOS in operation.

Options

The /R option shows the full version and release number of ROM-DOS.

Example

The following example changes the record of current DOS version in use to DOS 5.0. Any programs that are executed, following this command, will recognize that DOS 5.0 is running.

```
VER 5.0
```

XCOPY.EXE

Type

External

Purpose

The XCOPY command copies multiple files and, optionally, subdirectories from one disk to another.

Syntax

```
XCOPY [source] [target] [/options]
```

Remarks

The XCOPY command is used for copying multiple files and subdirectories, if they exist.

The *source* and the *target* parameter are complete drive path and file specification descriptions. If you do not specify a path, XCOPY assumes the default path. If a file name is not specified then *.* is assumed.

The ATTRIB command may be used to modify the archive bit for the various XCOPY options that check the archive status of files. Refer to the ATTRIB command description for instructions.

Options

The /A copies only source files that have the archive bit set in them. The archive is not reset.

The /D<*mm-dd-yy*> option causes XCOPY to copy only those files with a date later than the date specified in the /D option.

The /E option causes XCOPY to create subdirectories on the target even if they are empty.

The /M option causes XCOPY to copy only those source files that have the archive bit set. Once the source file is copied the archive bit is reset.

The /P option causes XCOPY to prompt before each file is copied. The prompt appears as follows:

```
C:\COMMAND.COM (Y/N)?
```

If a Y is entered then the file is copied, otherwise, the file is not copied.

The /S option causes XCOPY to copy files in subdirectories of the source directory.

The /V option causes XCOPY to verify each write to the disk.

The /W option causes XCOPY to wait before starting to copy files. The following prompt is displayed.

```
Press any key to begin copying file(s)
```

Example

XCOPY to the A drive all files in the BIN subdirectory that have an EXE extension and that have the archive bit set.

```
XCOPY \bin\*.exe a: /a
```

XDEL

Type

External

Purpose

The XDEL command deletes files and subdirectories including empty subdirectories.

Syntax

XDEL *filespec* [/options]

Remarks

The XDEL command allows the deletion of files and subdirectories in the same step.

The `filespec` argument is the starting point for the deletion. The `filespec` argument can contain the drive and path for reaching the starting point and can also contain wild card characters to designate a group of file or directory names.

Options

The /D option deletes empty subdirectories. Deletion will not occur if there are any files in the subdirectory, unless the /S option is specified along with the /D option.

The /P option gives you a confirmation prompt before deleting each file.

The /R option allows deletion of read-only files without having to change the file attributes prior to the delete.

The /S option deletes files in subdirectories located below the specified starting directory. When used along with the /D option, it will delete the files within a subdirectory along with the subdirectory entry itself.

Examples

The following examples will all use the diagram below as a reference:

```
DIR1
    SUB1
        sub1file.txt
    SUB2
        sub2file.txt
    SUB3
dir1file1.txt
dir1file2.txt
```

The following XDEL command would delete all of the files in the directories DIR1, SUB1, and SUB2 but not the directory headings themselves.

```
XDEL DIR1 /s
```

To delete the empty subdirectory heading for SUB3, use XDEL as follows:

```
XDEL DIR1 /d
```

To delete all of the files in the three directories and the directory headings at the same time, use the following command:

```
XDEL DIR1 /s /d
```

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Chapter 7
The Docking Stations

Introduction

This chapter is intended for use by system administrators and advanced users who need to modify the 4-Slot Dock's factory-configuration settings.

LXE offers three powered docking stations for the 2325 – a stationary single dock that holds one 2325, a vehicle mounted single dock that holds one 2325 and a four slot dock that holds from one to four 2325s. The powered docking stations have two primary uses:

- Recharge the 2325 NiMH battery pack(s) and lithium backup batteries.
- Provide a connection for serial communications between the 2325(s) and the host computer or another serial device, such as a printer or modem.

All powered docking stations require an AC/DC power source. The four slot docking stations can be daisy chained together. The station at the end of the chain must be cabled to the host.

The non-powered vehicle mount docking station is a 2325 retention device *only*.

For basic information about the Vehicle Mount Holder, Single Slot and the 4-Slot Dock, see the "2325 Docking Station Installation and Operator's Guide".

If the 2325 contains non-rechargeable batteries, do not connect the power supply to the dock.

The Single Dock

A cable and power adapter for the Single Dock are available separately. To make your own cables, see Appendix A for pin assignments.

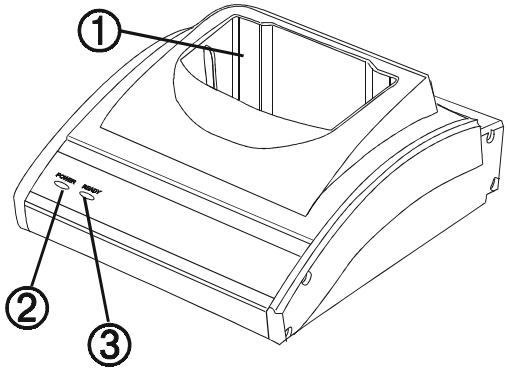


Figure 7-1 Single Dock

1 2325 Receptacle

2 Power Indicator

3 Ready Indicator

Attaching the Single Dock to a Computer

Complete the following steps:

1. Attach the 25-pin end of the cable to the cable connector on the back of the Single Dock.
2. Attach the other end of the cable to a serial port on your computer.
3. If you ordered the optional power adapter, attach it to the Single Dock .

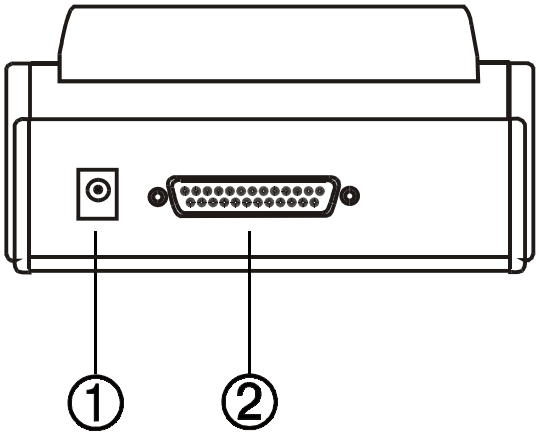


Figure 7-2 Back Panel of the Single Dock

1 Power input jack

2 Cable connector

The Power Adapter

Important: ***If the 2325 contains non-rechargeable batteries, do not connect the power supply to the dock.***

You can use a 9-volt power adapter with the Single Dock to recharge the batteries in the 2325. Power adapters are available from LXE.

Attach the small, round plug of the power adapter to the power input jack on the back of the Single Dock. Plug the other end into an AC outlet or power strip. The red light-emitting diode (LED) labeled **POWER** on the front panel of the Single Dock should light up.

The power adapter is used only to recharge the batteries in the 2325. However, if you do not use it, the LED indicators on the Single Dock will not light up. (The **READY** light indicates that the 2325 is properly inserted in the dock. The **READY** light will appear red when charging 2325 batteries and green when batteries are fully charged.)

Note: Use only a 9-volt power adapter supplied by LXE. Using another adapter can damage the dock.

Using a Single Dock

Set up the Single Dock as described in the preceding sections. Place the 2325 into the dock, with the keypad facing the front. If you are using a power adapter, the green LED labeled **READY** on the front panel of the Single Dock should light up.

Note: If the READY light does not come on, make sure the POWER light is on and the 2325 is fully inserted into the dock, with the keypad facing out. If it still doesn't work, make sure the Dock adapter is securely attached to the 2325 and that the contacts in the dock are clean. (If you are not using a power adapter, the light will not come on.)

While the 2325 is in the Single Dock, you can download programs to it or upload data from it just as if it were connected directly to your computer. You can even leave the 2325 in the dock while you use an attached barcode reader.

If you are using a nickel metal hydride (NiMH) battery pack in the 2325, you can use the Single Dock to recharge the batteries. Simply leave the battery pack in the 2325 when you place it in the dock. The battery pack and the lithium backup battery will be recharged while the READY light is on. The charging time is 3 to 8 hours, depending on the type of battery pack and the current charging level.

Technical Specifications

Single Dock

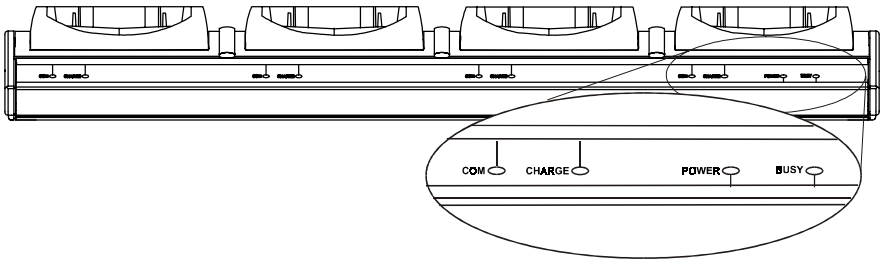
Parameter	Specification
Height	2.75" (6.9 cm)
Width	6" (15 cm)
Depth	5.25" (13.33 cm)
Weight	1.15 lbs (.52 kilograms)
Usage	Indoors

Power Supply

Parameter	Specification
Transformer	Class 2
Input	120V 60Hz 12W
Output	9VDC 500mA
Usage	Indoors

The Four Slot Dock

Front Panel



The front panel of the 4-Slot Dock contains the mode indicators.

Indicator	Function
COM	Green when the 2325 in the slot is communicating with the host. All other slots in the docking station (and when more than one four slot dock is connected to another in a docking station network) must wait until it has finished communicating.
CHARGE	Red when 2325 batteries are being charged. Green when 2325 batteries are fully charged.
POWER	Green when docking station is receiving AC power.
BUSY	Red when a docking station in the cabled network is communicating with the host. *Note: The COM light is green when an individual 2325 is communicating with the host.*

Back Panel

The back panel of the 4-Slot Dock has cable jacks for connections to the host computer and other 4-Slot Docks. The power input jack is also located there. (For information about connecting docks, see “Creating a Dock Network.”).

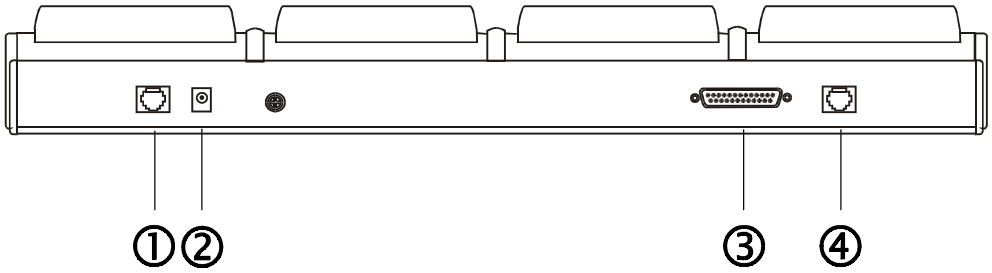


Figure 7-3 The Back Panel on the 4-Slot Dock

1 Connector for dock-to-dock cable

2 Power input jack

3 Connector for RS-232 host cable

4 Connector for RS-422/485 host cable **or** dock-to-dock cable

Important: ***If any 2325 contains non-rechargeable batteries, do not connect the power supply to the dock.***

Creating a Dock Network

The following figure shows the back of two docks in a network. The dock on the left is connected to a third dock (which may be connected to another dock). The dock on the right is connected to the host computer with an RS-232 cable. (To use an RS-422/485 connection to the host, you would use the telephone-style jack at the far right. The RS-232 connector would not be used.)

Each 4-Slot Dock unit in the network must be connected to a power supply.

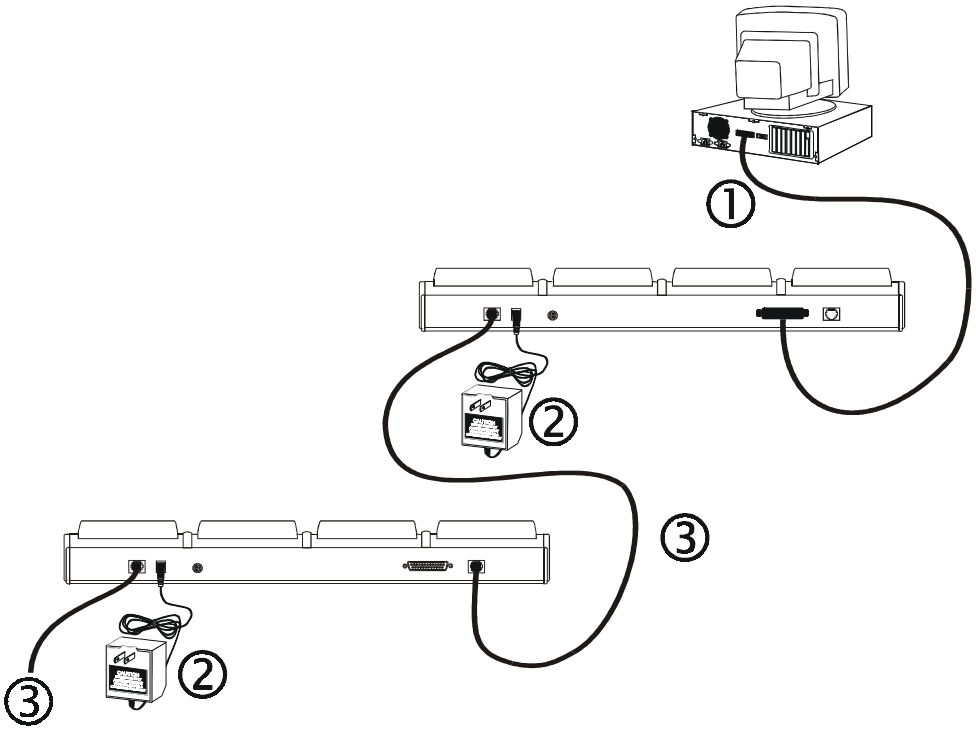


Figure 7-4 Connections for 4-Slot Docks in a Network

1 dock-to-host cable

2 power-adapter

3 dock-to-dock cable

Installation

Power Adapter

Use one of the following:

- **US**: US style 110VAC plug
- **International**: 100–250VAC 47–63Hz input with IEC320 (includes power cord)

Cables

To connect the 4-Slot Dock to a host computer, use one of the following:

- RS-232 cable
- RS-422/485 cable (custom-built for your application)

To form a network of multiple 4-Slot Docks, connect the docks to each other with either of the following LXE cables:

- Two-foot cable
- Ten-foot cable

Note: See Appendix A for pin assignments. See Chapter 1 section titled "Accessories."

Connecting the Dock to the Host

To connect the 4-Slot Dock to a computer, complete the following steps:

1. Plug one end of the serial cable into the appropriate connector on the back of the 4-Slot Dock.
2. Attach the other end of the cable to an available serial port on your computer.
3. Attach the power adapter cord to the power input jack on the back of the dock. (If you are using the international power adapter, plug one end of the power cord into the power adapter.)
4. Plug the power cord into an outlet or power strip (preferably one that has surge protection). The **POWER** LED on the front panel of the dock should light up.

Using the 4-Slot Dock

Charging Batteries

To charge the rechargeable batteries in a 2325, place the 2325 into any slot of a 4-Slot Dock that is connected to a power supply. The dock does not need to be connected to a computer.

Transferring Data

To transfer programs or data files between a 2325 and a computer through a 4-Slot Dock, you can use the XFER utility, the Configuration Utility, or any standard serial-transfer program.

See Chapter 4 “Configuration Utility” or Chapter 5 “Using XFER.”

Operating Modes

The 4-Slot Dock network can operate in either of two modes:

- In *terminal-demand mode* (the default), the 4-Slot Dock network grants access to the communications line to individual 2325s on a priority basis.
- In *host-controlled mode*, the host controls which 2325 gets access to the communications line at any time.

For information about setting and using these modes, see the”2325 Programmer’s Guide.”

XFER, the serial file-transfer utility that comes with the 2325, can access the 4-Slot Dock network in terminal-demand mode without any further action from the user. Simply use XFER as you normally would to send and receive files from one or more 2325s to the host. If two or more 2325s attempt to communicate with the host at the same time, the 4-Slot Dock network arbitrates between them so that each 2325 gets a chance at the line.

The 4SLOT.SYS Device Driver

To use terminal-demand mode within a custom application or to use host-controlled mode, you should have the 4SLOT.SYS DOS device driver installed on the portable. The 4SLOT.SYS driver extends the capabilities of the DOS COM driver and provides a programming interface so that custom programs can request, detect, and drop access to the 4-Slot Dock communications line. For host-controlled mode, the 4SLOT.SYS driver allows the user to assign a unique name to the portable that the host can use to control that portable's ability to access the 4-Slot Dock communications line.

Note: The 4SLOT.SYS driver is included in the 2325 Developer's Toolkit. For information about purchasing the toolkit, contact your LXE representative.

The XFER.EXE program has limited ability to access the 4-Slot Dock network when the 4SLOT.SYS driver is not loaded. This allows you to use the 4-Slot Dock network to download the 4-Slot Dock device driver to any 2325 that doesn't already have it.

You can use the Configuration Utility to transfer the 4SLOT.SYS driver to the 2325 and modify the CONFIG.SYS file. Complete the following steps:

1. Install the Developer's Toolkit software on your computer. (Follow the installation instructions provided with the Developer's Toolkit.) Be sure to include the 4-Slot Dock software during the installation process. (You should also install the Configuration Utility at this point, if you haven't already.)
2. Start the Configuration Utility, and select the **Transfer Files** button on the main menu. Find the 4SLOT.SYS file (in the \DOS directory if you used the default installation) and transfer it to the C:\DOS directory on the 2325.
3. Transfer the 2325's C:\CONFIG.SYS file to a temporary location on your PC. Using a text editor (for example, Notepad), add the following line to the end of the file:

   ```
   device=c:\dos\4slot.sys
   ```

   Save the file, and transfer it back to the **`c:\`** directory on the 2325.
4. Reboot the 2325.

Note: You can save the file list or create a new .CFG file to transfer the 4-Slot Dock driver and modified CONFIG.SYS file to multiple 2325s.

Transferring Files with XFER

You can transfer files with the XFER utility on the 2325. XFER has the ability to automatically request access to the communications line from the 4-Slot Dock, whether the 4-Slot Dock device driver is loaded or not.

To use XFER to transfer a file to the 2325, place the 2325 in a slot on the 4-Slot Dock. On the 2325, type in the command to receive a file, which is typically the following:

```
C:\> xfer /r filename.txt
```

On the host, type the following at a DOS prompt:

```
C:\> xfer filename.txt
```

Once you execute the XFER command on the 2325, the unit requests access to the communications line from the 4-Slot Dock. When access is given to the 2325, the COM LED for that slot will come on with a green light. When you execute the XFER command on the host, XFER will transfer the file from the host to the 2325. When XFER exits on the 2325, the COM LED goes out, indicating that the 2325 has relinquished access to the communications line.

Note: Xmodem uses no flow control, by default. For Zmodem, the default flow control is RTS/CTS. To use XFER with Zmodem with the 4-Slot Dock, hardware flow control must be turned off using the appropriate XFER command line switch, and XON/XOFF flow control should be used instead. This holds true for any communications software on a 2325 using the 4-Slot Dock.

For complete information about the XFER utility, see Chapter 5 “Using XFER.”

Setting the Baud Rate

The 4-Slot Dock is capable of operating at the following baud rates:

9600

19200

38400

115200

It is configured for 19200 baud at the factory.

When running in host-controlled mode, the 4-Slot Dock network must be informed of the baud rate the host and 2325s will be using and so that it can set itself accordingly.

To enable the 4-Slot Dock network to detect and set the baud rate, follow the procedure below. You will need a host-communications software package, such as ProCOMM or HyperTerminal. It does not matter if the portables have the 4SLOT.SYS driver loaded. However, each portable must have the 4SLOT.SYS driver loaded if the host is to control that portable.

Complete the following steps.

1. Set your host-communications package or program to 2400 baud. Send a single space to the dock network. You will not get any feedback from any of the 4-Slot Docks in the dock network.

   Note: This step isn't always necessary, but it ensures that the 4-Slot Docks will detect a baud rate error as quickly as possible. It also eliminates concern about what baud rates the various docks are already in.

2. Now set your host communications package or program to the desired baud rate and send a plus character (**+**) to the dock network. This is a synchronization character that the docks use to verify that they are correctly getting data from the host on a baud rate change.

3. To verify that the docks are correctly configured, send the **`Request Unit IDs`** command **`DCRI`** to the dock network.

   Note: You can type in the command at a terminal communications program, send it out the COM port from an application, or copy it to the COM port device driver under DOS.

   You should receive the unit IDs in brackets (i.e., **`[Unit ID]`**) from any 2325s in dock slots. For each empty slot in the dock

network, the 4-Slot Dock will receive a blank unit ID (**[ ]**). A slot will return the reserved Unit ID **[UNKNOWN]** if the 2325 in the slot is powered off, the 2325 does not have the 4-Slot Dock driver (**4slot.sys**) loaded, or the baud rate of the 2325 is not set to the same baud rate as the 4-Slot Dock network and host computer.

If any problems occur with a dock, or if you are unable to verify that a dock is correctly configured, attach that dock directly to the host computer with an RS-232 cable. Then repeat the above steps with only the one dock attached to the host. The dock should send back four unit IDs, with unit IDs of **[ ]** for empty slots and **[UNKNOWN]** for slots that have 2325s without the 4-Slot Dock device driver loaded.

Technical Specifications

Four Slot Dock

Parameter	Specification
Height	2.75 in. (6.98 cm)
Width	6” (15 cm)
Depth	20” (50.8 cm)
Weight	4.5 lbs (2.04 kilograms)
Usage	Indoors

Power Supply

Parameter	Specification
Transformer	Class 2
Input	120V 60Hz 12W
Output	9VDC 500mA
Usage	Indoors

Vehicle Mounted DC Single Dock

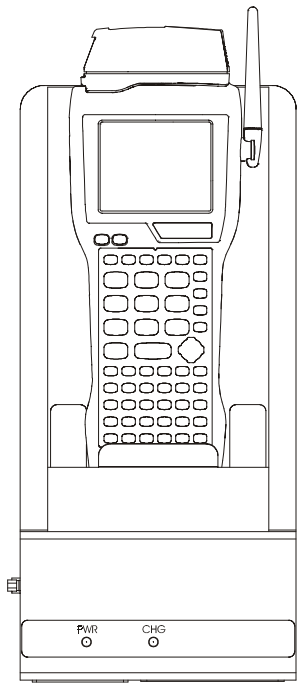


Figure 7-5 Vehicle Mounted DC Single Dock for One 2325

Indicator	Function
PWR (Power)	Green when receiving power from a vehicle battery.
CHG (Charge)	Green when charging the main and backup batteries in the 2325.

Using the DC Single Dock

Note: The Power LED on the dock is illuminated when the dock is receiving DC power. Batteries in the 2325 will not charge unless the Power LED is on.

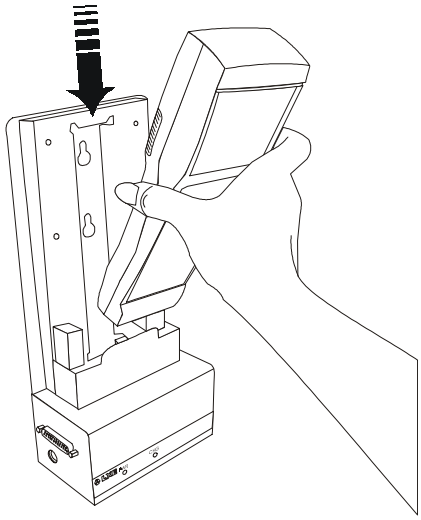


Figure 7-6 Insert 2325 in DC Single Dock

*Note: LXE recommends the 2325 be inserted in the dock **after** the DC Dock is securely mounted to a vehicle.*

1. Place the 2325 in the DC dock with the keypad facing out (on the same side as the indicators).
2. Push the 2325 down into the well and release. The handstrap hook will connect with the upper tab, securing the 2325 in the dock. (See arrow in figure titled "Insert 2325 in DC Single Dock.")

The dock will begin charging the batteries. The 2325 can begin communicating with another serial device, such as a printer or modem.

DC Single Dock Vehicle Wiring and Mounting Instruction

Introduction

The DC Single dock is intended for mounting in typical over the road vehicles such as step vans or semi tractors. Because of the variety of vehicle configurations and personal driver preferences, no one mounting configuration can suit all applications.

LXE does offer a vehicle mounting bracket that provides vibration isolation, but in many cases the user may want to provide their own mounting hardware. Off the shelf cell phone mounting equipment or custom mounting brackets could be used.

The mounting instructions that follow show the use of the LXE bracket and the mounting hole pattern to be used if a custom mount is to be used.

Before Installation Begins . . .

Verify you have the following DC Single dock components:

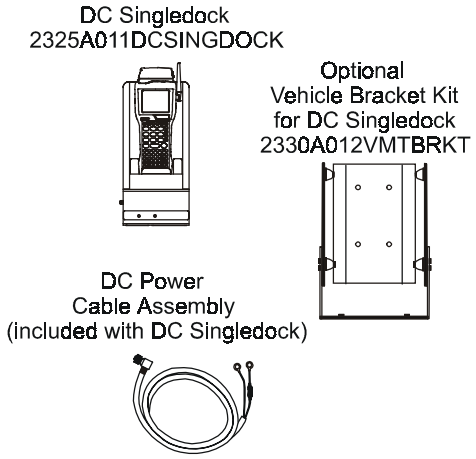


Figure 7-7 Singledock Components

Note: Hardware and tools needed for attaching the vehicle mounting bracket to the vehicle are not supplied by LXE.

Quick Start

1. Assemble mounting bracket.
2. Install Mounting Bracket on a stable, flat surface. Use the LXE Vehicle Mounting Bracket or an equivalent mounting assembly.
3. Insert the 2325 in the DC Singledock Bracket Assembly.
4. Connect power source to the Singledock.
5. Dock Power LED illuminates.
6. Turn the 2325 on.
7. You are ready to begin standalone operation.

Vehicle 12VDC Connection

Important	Equipment is designed to use 11 to 16.5 volt power source only.

The DC Singledock is designed for use with any automotive DC power source within the range of 11 V to 16.5 V.

It is recommended that the vehicle cable be connected to an unswitched outlet on the vehicle's fuse box. This connection method reduces the chance of interference from the vehicle's charging system.

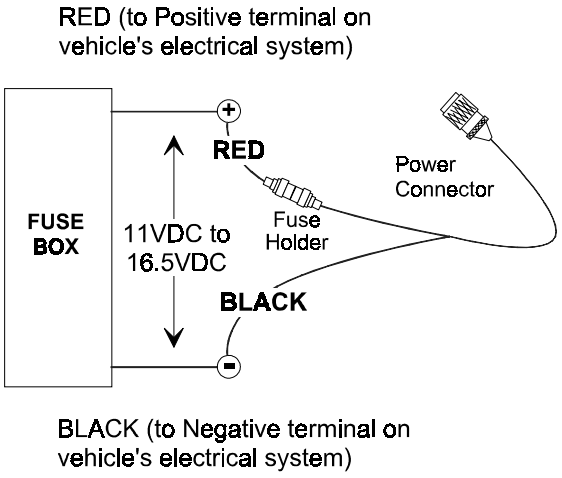


Figure 7-8 Proper Connection of the Vehicle Cable

Caution: ⚠	*Correct electrical polarity and grounding is required for safe and proper installation.* *Only connect to a negative ground DC supply circuit.* *Not for installation to positive ground circuits.*

When the Singledock is connected to an unswitched outlet on the fuse box the 2325 battery will always receive a charge from the vehicle battery. If the unit is left turned on for extended periods of time, the 2325 could drain the vehicle battery.

If the Singledock is connected to a switched outlet on the fuse box the 2325 and battery will only charge when the vehicle is on. This will eliminate the problem of draining the vehicle battery.

Fuse Replacement

The unit uses a 250V, 1.5A (fast blow), high current interrupting rating fuse that is externally accessible and user replaceable. Should it need replacement, replace with same size, rating and type of fuse (such as Bussman AGC-1 1/2).

LXE Vehicle Bracket

Install the Bottom Mounting Bracket portion of the mounting assembly to the vehicle using ¼" (6.35mm) maximum diameter fasteners (not supplied by LXE).

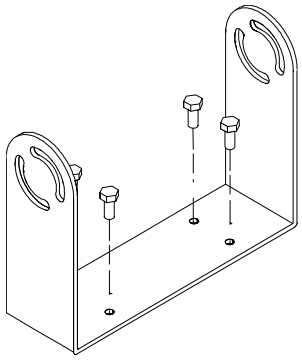


Figure 7-9 Bottom Mounting Bracket

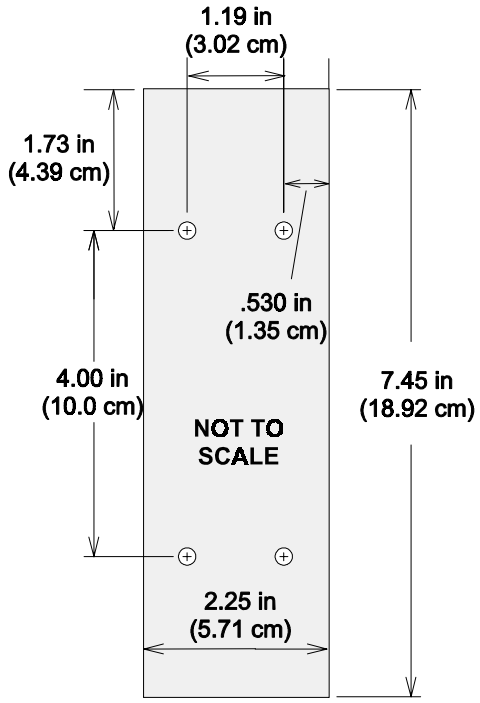


Figure 7-10 DC Singledock Vehicle Bracket Mounting Pattern

Fasten the backplate assembly to the DC Single dock using the thru holes in the backplate and the threaded holes in the back of the Single dock. Four #8-32 fasteners are provided with the mounting kit.

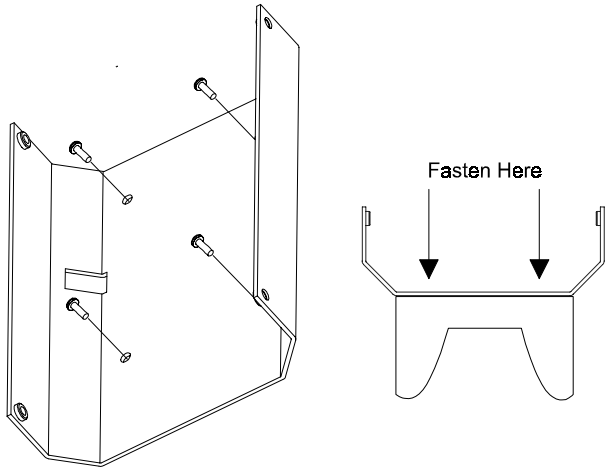


Figure 7-11 Fasten Backplate Assembly to DC Singledock

The DC Single dock is ready for cabling.

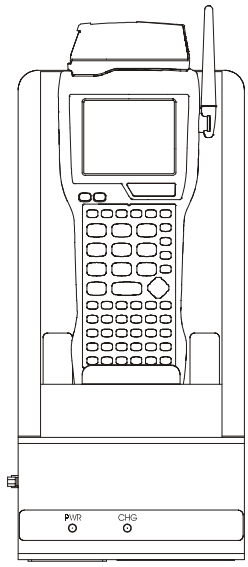


Figure 7-12 DC Singledock in LXE Vehicle Mounting Bracket

Custom Mounting Brackets

When using a non-LXE mounting bracket, use these dimensions when placing the OEM bracket on the DC Single dock.

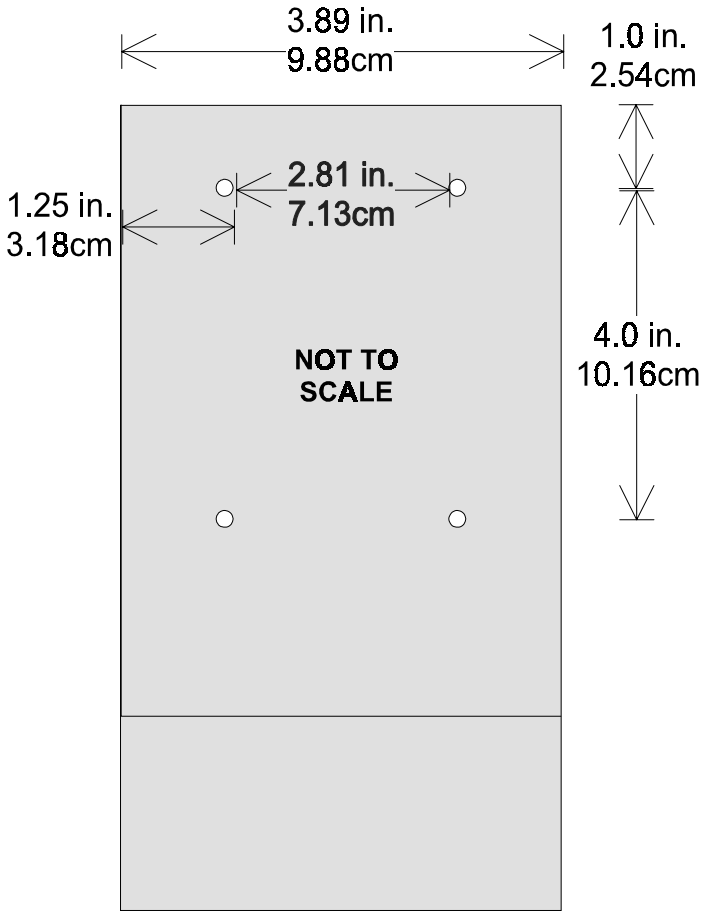


Figure 7-13 Back View of DC Singledock before Mounting Custom Bracket

Technical Specifications

Vehicle Mount DC Single Dock

Parameter	Specification
Height	12.5 " (31.7 cm)
Width	5.75" (14.6 cm)
Depth	3.25" (8.3 cm)
Weight	2.65 lbs (1.2 kilograms)
Construction	.03" (.08 cm) cold-rolled steel
Input Power	12VDC @ 1 Amp
Environment	Inside Vehicle

Power Supply

Parameter	Specification
Input	100-200VAC, 50-60Hz, 0.5-0.3A
Output	+12VDC@2.08A (nominal)
Approvals	UL, CSA, CE, TUV
Environment	Indoor use only

Vehicle Mount Dock

The vehicle mount dock has no indicators and, as it does not have an external power supply, it cannot recharge the unit's batteries.

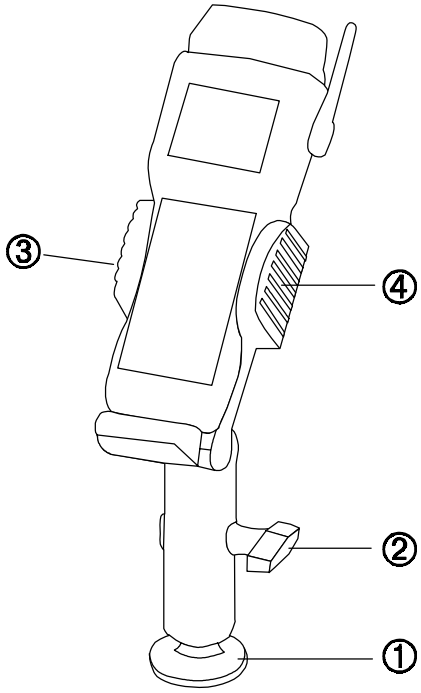


Figure 7-14 Adjustable Vehicle Mount Dock for One 2325 (No Power/Communications)

1 Base Plate. Includes 3 stainless steel screws. The screwdriver needed when attaching the base plate to the vehicle are not supplied by LXE.

2 Adjustable lever.

3 Quick Release Button. Located on the left hand side of the cradle portion of the holder.

4 Holder.

Mounting to a Vehicle

When installing the Vehicle Mount Dock in the vehicle, the dock should be protected from physical damage and it's location should not interfere with an operator's normal activities.

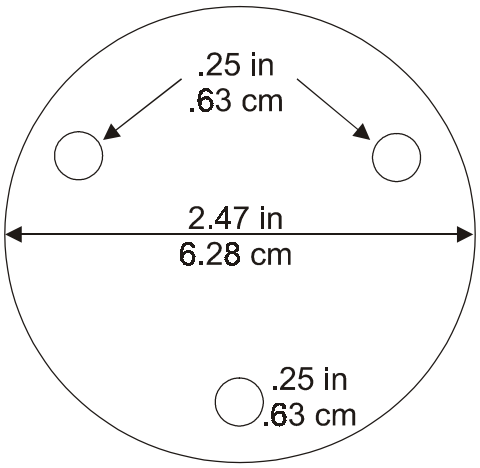


Figure 7-15 Mounting Dimensions

Using the Vehicle Mount Dock

Note: The Vehicle Mount Dock must be securely mounted to the surface before use.

Place the 2325 in the dock with the keypad facing outwards (or up).

Squeeze the holder snugly on both sides of the 2325. An internal ratchet mechanism holds the computer securely.

Adjust the pedestal using the lever on the pedestal.

Press the quick release lever to remove the 2325 from the dock.

Periodically verify the security of the mounting screws.

Note: The 2325 must be secured in the Vehicle Mount Dock before the vehicle is moving.

Technical Specifications

Height	Ranges from 9.75 in (248 mm) to 11.75 in (298mm)
Width at top	Ranges from 2.0 in (51 mm) to 3.5 in (89 mm)
Pedestal	7.0 in (178 mm)
Base	2.475 in (6.28 mm)
Material	Black powder coated die-cast aluminum.
Screws/Fasteners	3 ea. .25 in (.68 mm) stainless steel screws.

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Appendix A
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Appendix A
Connector Configurations

Introduction

Cables for all 2325 products are available from LXE. However, you may want to make your own cables for custom uses. This appendix provides information about 2325 cables, including diagrams and tables describing the connector configurations for 2325s, the Single Dock, and the 4-Slot Dock.

If the 2325 contains non-rechargeable batteries, do not connect the power supply to the dock.

The 2325 Computer

Laser-Scanner Connector

Each 2325 *without an installed laser module* has a standard 9-pin connector for scanner input at the top.

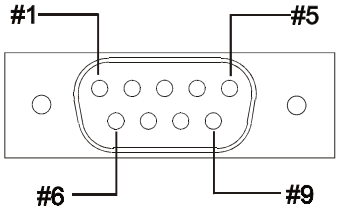

Figure A-1 The Scanner Input 9-Pin Connector

Pin #	Signal	Notes
1	Laser sync in	
2	Barcode data in	
3	Good-read out	
4	Scan-enable out	Not normally used
5	Laser trigger in	
6	Laser-scan-enable out	
7	GND	
8	GND	
9	5V out	300mA max

Serial Port Jack

All 2325s have a 10-pin telephone-style jack in the serial port at the bottom.

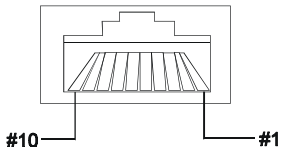

Figure A-2 The Serial Port Jack in the Base of the 2325 Computer

Pin #	Signal	Notes
1	DCD in	RS-232
2	5V out	300mA max
3	RXD	RS-232
4	HS out	RS-232
5	TXD	RS-232
6	Battery	Charging input from dock
7	Ring in	RS-232
8	GND	
9	HS in	RS-232
10	GND	

Single Dock

The back panel of the Single Dock has a 25-pin dock-to-host cable connector.

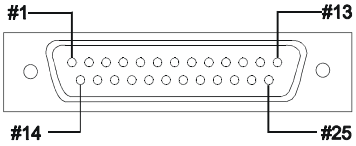

Figure A-3 The Cable Connector for the Single Dock

25-Pin Connector

Pin #	Signal
1	Frame GND
2	TXD
3	RXD
4	RTS
5	CTS
6	DSR
7	GND
8	DCD
9–19	Unconnected
20	DTR
21	Unconnected
22	Ring in
23–25	Unconnected

Vehicle Mounted DC Single Dock

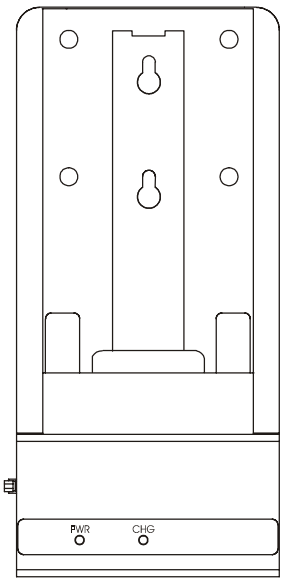

Figure A-4 Vehicle Mounted DC Single Dock

25-Pin Connector

The side panel of the DC Single Dock has a 25-pin RS-232 cable connector.

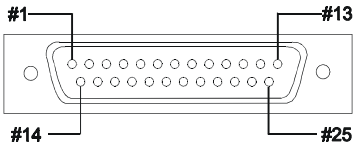

Figure A-5 The Cable Connector for the DC Single Dock

Pin #	Signal
1	Frame GND
2	TXD

Pin #	Signal
3	RXD
4	RTS
5	CTS
6	DSR
7	GND
8	DCD
9–19	Unconnected
20	DTR
21	Unconnected
22	Ring in
23–25	Unconnected

Vehicle 12VDC Connection

Important	Equipment is designed to use 11 to 16.5 volt power source only.

The DC Singledock is designed for use with any automotive DC power source within the range of 11 V to 16.5 V.

It is recommended that the vehicle cable be connected to an unswitched outlet on the vehicle's fuse box. This connection method reduces the chance of interference from the vehicle's charging system.

See Chapter 7 "The Docking Stations" for vehicle wiring instruction and diagrams.

Caution:	*Correct electrical polarity and grounding is required for safe and proper installation.* *Only connect to a negative ground DC supply circuit.* *Not for installation to positive ground circuits.*

The 4-Slot Dock

The back panel of the 4-Slot Dock has a 25-pin dock-to-host cable connector and two telephone-style cable jacks: one for “upstream” communications and one for “downstream” communications. The upstream side is the side closer to the host; the downstream side is farther from the host.

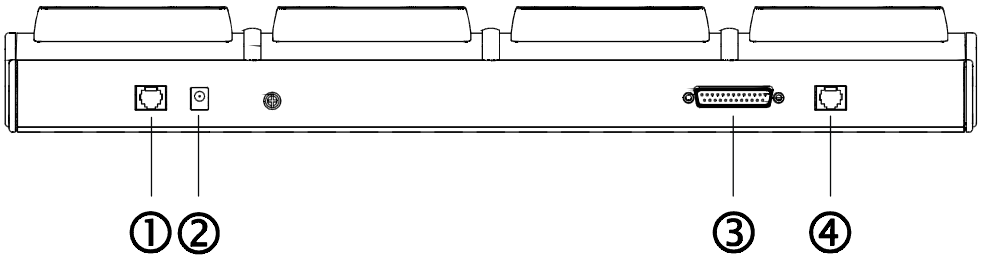

Figure A-6 The Back Panel on the 4-Slot Dock

1 Downstream jack, for dock-to-dock cable.

2 Power input jack.

3 Connector for RS-232 host cable.

4 Upstream jack, for RS-422/485 host cable ***or*** dock-to-dock cable.

In a dock network, the first 4-Slot Dock (the one closest to the host) has a cable running from its upstream jack to the host. The second 4-Slot Dock has a cable connecting its upstream jack to the downstream jack on the first 4-Slot Dock. Each additional 4-Slot Dock is connected similarly. The last 4-Slot Dock in the network has nothing plugged into its downstream jack.

Host-Interface Cable

The wiring for the 4-Slot Dock RS-232 host-interface cable is shown in the following table. The standard cable is 6 feet (2 meters) long.

Wiring for the 2325 4-Slot Dock Host-Interface Cable

Host Pin # (9-pin)	Host Pin # (25-pin)	Host Signal	4SD Pin # (25-pin)	Notes
shell	1/shell	Chassis GND	1/shell	
3	2	HostTxD#	3	Dock to host
2	3	HostRxD#	2	Host to dock
7 8	4 5	HostRTS HostCTS	5 4	Pins 4, 5, and 8 tied together inside 4-Slot Dock
6 4	6 20	HostDSR HostDTR	20 6	Pins 6 and 20 tied together inside 4-Slot Dock; must be active to select RS-232 interface
5	7	GND	7	

Dock-Network Cable Jacks

The wiring for the dock network cable jacks are shown in the following table. The network signals are differential type and are routed on twisted-pair wiring. The pinouts are assigned so as to accommodate certain off-the-shelf cables (e.g., L-COM #TRD855-* EIA568 Flex patch cables).

In the signal names, “in” and “out” refer to the logical direction of the signal with respect to the 4-Slot Dock. Note that Vcc and GND are present only on the upstream connector; they are reserved for future use on the downstream connector.

Wiring for the 4-Slot-Dock Network Cable Jacks

Pin #	Signal	
#	**Upstream Connector**	**Downstream Connector**
1	Vcc	Not used
2	HostXmtIn+	HostXmtOut+
3	HostXmtIn-	HostXmtOut-
4	ReqOut+	ReqIn+
5	HostRcvOut+	HostRcvIn+
6	HostRcvOut-	HostRcvIn-
7	ReqOut-	ReqIn-
8	InhIn+	InhOut+
9	InhIn-	InhOut-
10	GND	Not used

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Appendix B
Programming
Parameters

Appendix B
Programming Parameters

Introduction

This appendix contains information about programmable settings for the 2325. You can use the Configuration Utility or the barcodes provided in appendix C to program your 2325. Also included in this chapter are listings of files installed on the unit when using LXE's terminal emulation programs.

Note: New parameters added in Revision B: Ames Enable (ID 51) and Spotting Beam Enable (ID D7).

The "Parameters, Settings, and Defaults" table (see next page) provides the following information:

- **Code Parameter** is the "human" name for the programming option.
- **I.D. #** is the "decoder" name for the programming option. For example, if you wanted to set a Code 39 minimum label length, you would use I.D. #**01**. Programming I.D. numbers given in this appendix can be used with all programming methods.
- **Type** tells what kind of setting to use for each code parameter.

  On/Off is a toggle. **1** turns the parameter on, and **0** turns it off.

  Value requires a two-character entry (e.g., **02** for two beeps after each good read).
- **Acceptable Input** gives the settings or range of settings that you can use for each code parameter.
- **Defaults** tells how the parameter is set when you select predefined default **D0**, **D1**, or **D2**.

  Predefined Default 0 (D0) turns every on/off parameter off and sets all minimum and maximum lengths to the lowest values.

  Predefined Default 1 (D1) turns every on/off parameter on, sets all minimum lengths to the lowest values, and sets

all maximum lengths to the highest values. This default set is normally used only for troubleshooting. It gives you the best chance of reading an unknown barcode symbology and also identifies the symbology of each barcode you scan.

Predefined Default 2 (D2) is the default set that was installed in the 2325 at the factory. This default set will work for most applications. If you have changed any settings and want to reset the 2325 to the original defaults, scan the **D2** barcode in Appendix C.

Parameters, Settings, and Defaults

Enter 1 for On and 0 for Off.

Code 39

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	00	On/Off	On *or* Off	Off	On	On
Minimum length	01	Value	00–50	00	00	00
Maximum length	02	Value	01–50	01	50	20
Enable checksum	03	On/Off	On *or* Off	Off	Off	Off
Send checksum	04	On/Off	On *or* Off	Off	Off	Off
Full ASCII mode	05	On/Off	On *or* Off	Off	On	On

Interleaved 2 of 5

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	08	On/Off	On *or* Off	Off	On	On
Minimum length	09	Value	02 - 50	02	02	06
Maximum length	0A	Value	02 - 50	02	50	10
Enable checksum	0B	On/Off	On *or* Off	Off	Off	Off
Send checksum	0C	On/Off	On *or* Off	Off	Off	Off
Use lengths 6 and 14 only *(case code)*	0D	On/Off	On *or* Off	Off	Off	Off

Matrix 2 of 5

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	10	On/Off	On *or* Off	Off	On	Off
Minimum length	11	Value	01 - 50	01	01	06
Maximum length	12	Value	01 - 50	1	50	10
Enable checksum	13	On/Off	On *or* Off	Off	Off	Off
Send checksum	14	On/Off	On *or* Off	Off	Off	Off

Standard 2 of 5

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	15	On/Off	On *or* Off	Off	On	Off
Minimum length	16	Value	01 - 50	01	01	06
Maximum length	17	Value	01 - 50	01	50	10
Enable checksum	18	On/Off	On *or* Off	Off	Off	Off
Send checksum	19	On/Off	On *or* Off	Off	Off	Off
Use 2-bar start/stop	1A	On/Off	On *or* Off	Off	Off	Off

Code 11

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	1B	On/Off	On *or* Off	Off	On	Off
Minimum length	1C	Value	01 - 50	01	01	04
Maximum length	1D	Value	01 - 50	01	50	10
Require 2 check digits	1E	On/Off	On *or* Off	Off	Off	Off
Send check digit(s)	1F	On/Off	On *or* Off	Off	On	Off

Codabar/Ames

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	20	On/Off	On *or* Off	Off	On	On
Minimum length	21	Value	01 - 50	01	01	04
Maximum length	22	Value	01 - 50	01	50	20
Send start/stop	23	On/Off	On *or* Off	Off	On	Off
Codabar-to-CLSI conversion	24	On/Off	On *or* Off	Off	Off	Off
Wide intercharacter gaps allowed	25	On/Off	On *or* Off	Off	Off	On

MSI

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	26	On/Off	On *or* Off	Off	On	Off
Minimum length	27	Value	01 - 14	01	01	04
Maximum length	28	Value	01 - 14	01	14	10
Require 2 check digits	29	On/Off	On *or* Off	Off	Off	Off
2nd check digit Mod 11	2A	On/Off	On *or* Off	Off	Off	Off
Send check digit(s)	2B	On/Off	On *or* Off	Off	On	Off

Code 93

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	2C	On/Off	On *or* Off	Off	On	Off
Minimum length	2D	Value	00 - 50	00	01	02
Maximum length	2E	Value	01 - 50	00	50	20

Universal Product Code-A (UPC-A)

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	30	On/Off	On *or* Off	Off	On	On
Send system digit	31	On/Off	On *or* Off	Off	On	On
Send check digit	32	On/Off	On *or* Off	Off	On	Off
Convert UPC-A to EAN13	33	On/Off	On *or* Off	Off	On	Off

Universal Product Code-E (UPC-E)

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Use system digit 0	34	On/Off	On *or* Off	Off	On	On
Use system digit 1	35	On/Off	On *or* Off	Off	On	On
Convert UPCE to UPCA	36	On/Off	On *or* Off	Off	On	Off
Send system digit	37	On/Off	On *or* Off	Off	On	Off
Send check digit	38	On/Off	On *or* Off	Off	On	Off

European Article Numbering (EAN) Japan Article Numbering (JAN)

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable EAN-8/JAN-8	39	On/Off	On *or* Off	Off	On	On
Enable EAN-13/JAN-13	3A	On/Off	On *or* Off	Off	On	On
Convert EAN-13 to ISBN	3B	On/Off	On *or* Off	Off	Off	Off
Send EAN/JAN checksum	3F	On/Off	On *or* Off	Off	Off	Off

UPC, EAN, JAN Extensions

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Allow 2-digit extensions	3C	On/Off	On *or* Off	Off	On	On
Allow 5-digit extensions	3D	On/Off	On *or* Off	Off	On	On
Require extensions	3E	On/Off	On *or* Off	Off	Off	Off

Code 128

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable	40	On/Off	On *or* Off	Off	On	On
Minimum length	41	Value	01 - 50	01	01	02
Maximum length	42	Value	01 - 50	01	50	20
Enable UCC/EAN 128	43	On/Off	On *or* Off	Off	Off	Off

Labelcode 4/5

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Ames Enable	51	On/Off	On *or* Off	Off	On	Off
Enable	52	On/Off	On *or* Off	Off	On	Off

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Convert	53	On/Off	On *or* Off	Off	Off	Off

Other Controls

Enter 1 for On and 0 for Off.

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Laser programming enable	B0	On/Off	On *or* Off	On	On	On
Autoterminator	B1	Value	*Any single ASCII character (00=Off)*	(CR)	(CR)	(CR)
Auto-off timer	B2	Value	01 - 99 *(in 4-sec. increments) (00 = Off)*	75	75	75
Send assigned symbology identifiers*	B5	On/Off	On *or* Off	Off	On	Off
* *A = UPC-A* *B = I 2 of 5* *C = Code 39* *D = M 2 of 5* *E = UPCE* *F = S 2 of 5* *G = EAN-8* *H = MSI* *I = Codabar* *J = Code 11* *K = Code 128* *L = Code 93* *M = EAN-13* *N = Labelcode 4/5* *O = Ames*						
Good-read beep tone	B8	Value	00 = 2400 Hz 01 = 2600 Hz 02 = 2800 Hz 03 = 3000 Hz 04 = 3200 Hz 05 = 3400 Hz 06 = 3600 Hz 07 = 3800 Hz	00	00	00
Number of good-read beeps	B9	Value	01 - 04	01	01	01

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Good-read beep duration	BA	Value	00 = 0.07 sec. 01 = 0.13 sec. 02 = 0.18 sec. 03 = 0.36 sec.	00	00	00
Beeper volume	BC	Value	00 = Off 01 - 09 *(01 = Lowest;* *07 = Highest;* *08 = Higher;* *09 = Lower)*	07	07	07
Error beep tone	BD	Value	00 = 2400 Hz 01 = 2580 Hz 02 = 2770 Hz 03 = 3000 Hz 04 = 3270 Hz 05 = 3600 Hz 06 = 4000 Hz 07 = 4520 Hz	01	01	01
Long-range trigger mode *(long-range scanner models only)*	D4	On/Off	On = Release Scan Off = Spot Timeout	Off	Off	Off
Spot beam timeout *(long-range scanner models only)*	D5	Value	00 = 0.25 sec. 01 = 0.50 sec. 02 = 1.00 sec. 03 = 1.50 sec. 04 = 2.00 sec.	01	01	01
Release scan timeout *(long-range scanner models only)*	D6	Value	01 - 30 *(seconds)*	02	02	02
Spotting Beam Enable	D7	On/Off	On *or* Off	On	On	On
Keypress sound	DD	Value	00 = Off 01 = Click 02 = Beep	01	01	01
Enable CTL-ALT-DEL reboot	E0	On/Off	On *or* Off	Off	Off	On

Code Parameters	I.D. #	Type	Acceptable Input	Defaults		
				D0	D1	D2
Enable trigger programmability	E1	On/Off	On *or* Off	On	On	On
Backlight auto-off timeout	E2	Value	01 - 99 *(seconds)* *(00 = Off)*	15	15	15

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Appendix C
Barcodes for Configuring 2325

Introduction

This appendix provides barcodes for common setup parameters for programming the 2325. Factory default settings are listed in the section titled "Default Settings" and are included *as part of the parameter heading.*

Note: New parameters added in Revison B: Ames Enable (ID 51) and Spotting Beam Enable (ID D7).

To make settings that aren't provided here, you can use your own barcodes. Using the barcodes contained in this section, you can change any scanning system parameter or reset all parameters to their default values. This chapter contains Code 39 barcode symbols for system setup parameters.

Refer to the 2325 Installation and Operator's Guide (LXE DocID 2325A136OPGDUS) for the section titled "Scanner Warnings and Labels" for important laser safety information **before** using the scanner.

When scanning the barcodes in this section, *remember*:

- Do not look into the laser's lens.
- Do not stare directly into the laser beam.
- Do not remove the laser caution labels from the 2325.
- Do not connect the laser barcode module to any other device. The laser barcode module is certified for use with the 2325 only.

How To

Select the symbol parameter you want to scan. Lay this reference guide flat on a table or propped up.

Holding the scanner approximately 6 - 12 inches away from the symbol, scan the selected symbol.

When the Scan LED illuminates, the parameter has been decoded.

Note: Whether there are beeps in conjunction with scan and decode functions is dependent on the application currently running in

the 2325. For example, the ANSI Plus terminal emulator program emits one beep when a barcode is scanned and decoded successfully.

Default Settings

Code 39	
Enable	On
Minimum Length	0
Maximum Length	20
Enable Checksum	Off
Send Checksum	Off
Full ASCII Mode	On

Interleaved 2 of 5	
Enable	On
Minimum Length	6
Maximum Length	10
Enable Checksum	Off
Send Checksum	Off
Use Lengths 6 and 14 Only (Case Code)	Off

Matrix 2 of 5	
Enable	Off
Minimum Length	6
Maximum Length	10
Enable Checksum	Off
Send Checksum	Off

Standard 2 of 5	
Enable	Off
Minimum Length	6
Maximum Length	10
Enable Checksum	Off
Send Checksum	Off
Use 2-Bar Start/Stop	Off

Code 11	
Enable	Off
Minimum Length	4
Maximum Length	10
Require 2 Check Digits	Off

Send Check Digit(s)	Off

Codabar/Ames	
Ames Enable	Off
Enable	On
Minimum Length	4
Maximum Length	20
Send Stop/Start	Off
Codabar-to-CLSI Conversion	Off
Wide Intercharacter Gaps Allowed	On

MSI	
Enable	Off
Minimum Length	4
Maximum Length	10
Require 2 Check Digits	Off
2nd Check Digit Mod 11	Off
Send Check Digit(s)	Off

Code 93	
Enable	Off
Minimum Length	2
Maximum Length	20

Code 128	
Enable	On
Minimum Length	2
Maximum Length	20
Enable UCC/EAN 128	Off

Labelcode 4/5	
Enable	Off
Convert	Off

UPC-A	
Enable UPC-A	On
Send System Digit	On
Send Check Digit	Off
Convert UPC-A to EAN-13	Off

UPC-E	
Use System Digit 0	On

Use System Digit 1	On
Convert UPC-E to UPC-A	Off
Send System Digit	Off
Send Check Digit	Off

EAN/JAN	
Enable EAN-8/JAN-8	On
Enable EAN-13/JAN-13	On
Convert EAN-13 to ISBN	Off
Send EAN/JAN Checksum	Off

UPC/EAN/JAN Extensions	
Allow 2-Digit Extensions	On
Allow 5-Digit Extensions	On
Require Extensions	Off

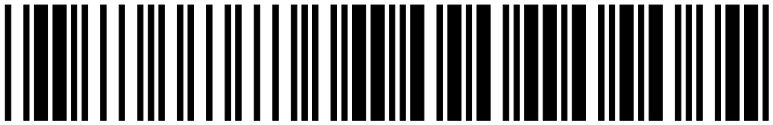
Other Controls	
Autoterminator	CR
Auto-Off Timer	5 min.
Send Symbology Identifier	Off
Good-Read Beep Tone (in Hertz)	2400
Number of Good-Read Beeps	1
Good-Read Beep Duration (in seconds)	0.07
Beeper Volume	Highest
Error Beep Tone (in Hertz)	2580
Long-Range Trigger Mode	Off (Spot Timeout)
Spot Beam Timeout (in seconds)	0.5
Release Scan Timeout (in seconds)	2
Spotting Beam Enable	On
Keypress Sound	Click
Enable Ctl-Alt-Del Reboot	On
Enable Trigger Programmability	On
Backlight Auto-Off Timeout (in seconds)	15

Barcodes

Predefined Defaults

D2

Predefined Defaults D2



Code 39

Enable - On

Code 39 Enable On

Code 39 Enable Off

Minimum Length - 0

Code 39 Minimum Length 0

Code 39 Minimum Length 10

Code 39 Minimum Length 20

$+$-0120EE

Code 39 Minimum Length 30

$+$-0130EE

Code 39 Minimum Length 40

$+$-0140EE

Code 39 Minimum Length 50

$+$-0150EE

Maximum Length - 20

Code 39 Maximum Length 1

$+$-0201EE

Code 39 Maximum Length 10

$+$-0210EE

Code 39 Maximum Length 20

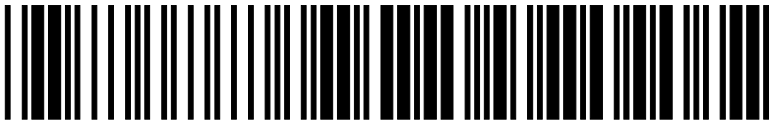
Code 39 Maximum Length 30

Code 39 Maximum Length 40

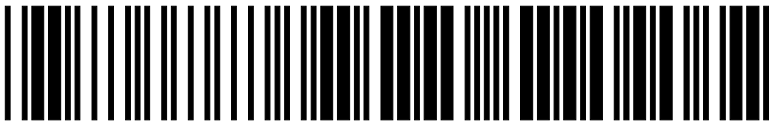
Code 39 Maximum Length 50

Enable Checksum - Off

Code 39 Enable Checksum On



Code 39 Enable Checksum Off



Send Checksum - Off

Code 39 Send Checksum On

Code 39 Send Checksum Off

Full ASCII Mode - On

Code 39 Full ASCII Mode On

Code 39 Full ASCII Mode Off

Interleaved 2 of 5

Enable - On

I 2 of 5 Enable On

I 2 of 5 Enable Off

Minimum Length - 6

I 2 of 5 Minimum Length 2

I 2 of 5 Minimum Length 6

I 2 of 5 Minimum Length 10

I 2 of 5 Minimum Length 20

* $ + $ - 0 9 2 0 E E *

I 2 of 5 Minimum Length 30

* $ + $ - 0 9 3 0 E E *

I 2 of 5 Minimum Length 40

* $ + $ - 0 9 4 0 E E *

I 2 of 5 Minimum Length 50

* $ + $ - 0 9 5 0 E E *

Maximum Length - 10

I 2 of 5 Maximum Length 2

* $ + $ - 0 A 0 2 E E *

I 2 of 5 Maximum Length 10

* $ + $ - 0 A 1 0 E E *

I 2 of 5 Maximum Length 20

* $ + $ - 0 A 2 0 E E *

I 2 of 5 Maximum Length 30

* $ + $ - 0 A 3 0 E E *

I 2 of 5 Maximum Length 40

* $ + $ - 0 A 4 0 E E *

I 2 of 5 Maximum Length 50

* $ + $ - 0 A 5 0 E E *

Enable Checksum - Off

I 2 of 5 Enable Checksum On

* $ + $ - 0 B 1 E E *

I 2 of 5 Enable Checksum Off

* $ + $ - 0 B 0 E E *

Send Checksum - Off

I 2 of 5 Send Checksum On

I 2 of 5 Send Checksum Off

Use Lengths 6 and 14 Only (Case Code) - Off

I 2 of 5 Use Lengths 6 and 14 Only On

I 2 of 5 Use Lengths 6 and 14 Only Off

Matrix 2 of 5

Enable - Off

Matrix 2 of 5 Enable On

Matrix 2 of 5 Enable Off

Minimum Length - 6

Matrix 2 of 5 Min Length 1

Matrix 2 of 5 Min Length 6

Matrix 2 of 5 Min Length 10

Matrix 2 of 5 Min Length 20

* $ + $ - 1 1 2 0 E E *

Matrix 2 of 5 Min Length 30

* $ + $ - 1 1 3 0 E E *

Matrix 2 of 5 Min Length 40

* $ + $ - 1 1 4 0 E E *

Matrix 2 of 5 Min Length 50

* $ + $ - 1 1 5 0 E E *

Maximum Length - 10

Matrix 2 of 5 Max Length 1

* $ + $ - 1 2 0 1 E E *

Matrix 2 of 5 Max Length 10

* $ + $ - 1 2 1 0 E E *

Matrix 2 of 5 Max Length 20

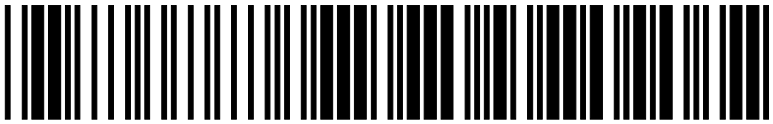
Matrix 2 of 5 Max Length 30

Matrix 2 of 5 Max Length 40

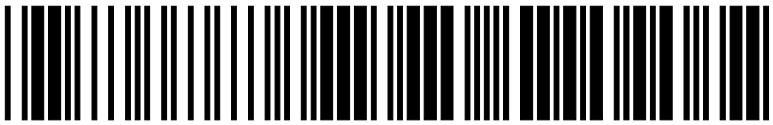
Matrix 2 of 5 Max Length 50

Enable Checksum - Off

Matrix 2 of 5 Enable Checksum On



Matrix 2 of 5 Enable Checksum Off



Send Checksum - Off

Matrix 2 of 5 Send Checksum On

Matrix 2 of 5 Send Checksum Off

Standard 2 of 5

Enable - Off

Standard 2 of 5 Enable On

* $ + $ - 1 5 1 E E *

Standard 2 of 5 Enable Off

* $ + $ - 1 5 0 E E *

Minimum Length - 6

Standard 2 of 5 Min Length 1

* $ + $ - 1 6 0 1 E E *

Standard 2 of 5 Min Length 6

* $ + $ - 1 6 0 6 E E *

Standard 2 of 5 Min Length 10

* $ + $ - 1 6 1 0 E E *

Standard 2 of 5 Min Length 20

$+$-1620EE

Standard 2 of 5 Min Length 30

$+$-1630EE

Standard 2 of 5 Min Length 40

$+$-1640EE

Standard 2 of 5 Min Length 50

$+$-1650EE

Maximum Length - 10

Standard 2 of 5 Max Length 1

$+$-1701EE

Standard 2 of 5 Max Length 10

$+$-1710EE

Standard 2 of 5 Max Length 20

* $ + $ - 1 7 2 0 E E *

Standard 2 of 5 Max Length 30

* $ + $ - 1 7 3 0 E E *

Standard 2 of 5 Max Length 40

* $ + $ - 1 7 4 0 E E *

Standard 2 of 5 Max Length 50

* $ + $ - 1 7 5 0 E E *

Enable Checksum - Off

Standard 2 of 5 Enable Checksum On

* $ + $ - 1 8 1 E E *

Standard 2 of 5 Enable Checksum Off

* $ + $ - 1 8 0 E E *

Send Checksum - Off

Standard 2 of 5 Send Checksum On

Standard 2 of 5 Send Checksum Off

Use 2-Bar Start/Stop - Off

Std 2 of 5 Use 2-Bar Start/Stop On

Std 2 of 5 Use 2-Bar Start/Stop Off

Code 11

Enable - Off

Code 11 Enable On

* $ + $ - 1 B 1 E E *

Code 11 Enable Off

* $ + $ - 1 B 0 E E *

Minimum Length - 4

Code 11 Minimum Length 4

* $ + $ - 1 C 0 4 E E *

Code 11 Minimum Length 10

* $ + $ - 1 C 1 0 E E *

Code 11 Minimum Length 20

* $ + $ - 1 C 2 0 E E *

Code 11 Minimum Length 30

$+$-1C30EE

Code 11 Minimum Length 40

$+$-1C40EE

Code 11 Minimum Length 50

$+$-1C50EE

Maximum Length - 10

Code 11 Maximum Length 1

$+$-1D01EE

Code 11 Maximum Length 10

$+$-1D10EE

Code 11 Maximum Length 20

$+$-1D20EE

Code 11 Maximum Length 30

$+$-1D30EE

Code 11 Maximum Length 40

$+$-1D40EE

Code 11 Maximum Length 50

$+$-1D50EE

Require 2 Check Digits - Off

Code 11 Require 2 Check Digits On

$+$-1E1EE

Code 11 Require 2 Check Digits Off

$+$-1E0EE

Send Check Digit(s) - Off

Code 11 Send Check Digit(s) On

$+$-1F1EE

Code 11 Send Check Digit(s) Off

$+$-1F0EE

Codabar/Ames

Codabar Enable - On

Codabar/Ames Enable On

$+$-201EE

Codabar/Ames Enable Off

$+$-200EE

Ames Enable - Off

Labelcode 4/5 Ames Enable On

$+$-511EE

Labelcode 4/5 Ames Enable Off

$+$-510EE

Minimum Length - 4

Codabar/Ames Min Length 1

Codabar/Ames Min Length 4

Codabar/Ames Min Length 10

Codabar/Ames Min Length 20

Codabar/Ames Min Length 30

Codabar/Ames Min Length 40

Appendix C
Barcodes for
Configuring 2325

Codabar/Ames Min Length 50

* $ + $ - 2 1 5 0 E E *

Maximum Length - 20

Codabar/Ames Max Length 1

* $ + $ - 2 2 0 1 E E *

Codabar/Ames Max Length 10

* $ + $ - 2 2 1 0 E E *

Codabar/Ames Max Length 20

* $ + $ - 2 2 2 0 E E *

Codabar/Ames Max Length 30

* $ + $ - 2 2 3 0 E E *

Codabar/Ames Max Length 40

* $ + $ - 2 2 4 0 E E *

Codabar/Ames Max Length 50

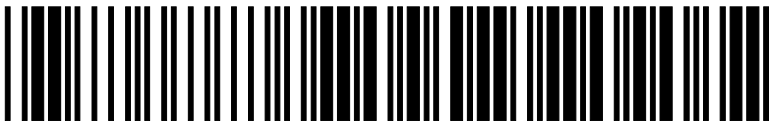
Send Stop/Start - Off

Codabar/Ames Send Stop/Start On

Codabar/Ames Send Stop/Start Off

Codabar-to-CLSI Conversion - Off

C/A Codabar-to-CLSI Conversion On



C/A Codabar-to-CLSI Conversion Off

Wide Intercharacter Gaps Allowed - On

C/A Wide Interchar Gaps Allowed On

C/A Wide Interchar Gaps Allowed Off

MSI

Enable - Off

MSI Enable On

MSI Enable Off

Minimum Length - 4

MSI Minimum Length 1

MSI Minimum Length 4

MSI Minimum Length 7

MSI Minimum Length 10

MSI Minimum Length 12

MSI Minimum Length 14

Maximum Length - 10

MSI Maximum Length 1

MSI Maximum Length 4

MSI Maximum Length 7

MSI Maximum Length 10

MSI Maximum Length 12

MSI Maximum Length 14

Require 2 Check Digits - Off

MSI Require 2 Check Digits On

MSI Require 2 Check Digits Off

2nd Check Digit Mod 11 - Off

MSI 2nd Check Digit Mod 11 On

* $ + $ - 2 A 1 E E *

MSI 2nd Check Digit Mod 11 Off

* $ + $ - 2 A 0 E E *

Send Check Digit(s) - Off

MSI Send Check Digit(s) On

* $ + $ - 2 B 1 E E *

MSI Send Check Digit(s) Off

* $ + $ - 2 B 0 E E *

Code 93

Enable - Off

Code 93 Enable On

$+$-2C1EE

Code 93 Enable Off

$+$-2C0EE

Minimum Length - 2

Code 93 Minimum Length 2

$+$-2D02EE

Code 93 Minimum Length 10

$+$-2D10EE

Code 93 Minimum Length 20

$+$-2D20EE

Code 93 Minimum Length 30

* $ + $ - 2 D 3 0 E E *

Code 93 Minimum Length 40

* $ + $ - 2 D 4 0 E E *

Code 93 Minimum Length 50

* $ + $ - 2 D 5 0 E E *

Maximum Length - 20

Code 93 Maximum Length 2

* $ + $ - 2 E 0 2 E E *

Code 93 Maximum Length 10

* $ + $ - 2 E 1 0 E E *

Code 93 Maximum Length 20

* $ + $ - 2 E 2 0 E E *

Code 93 Maximum Length 30

* $ + $ - 2 E 3 0 E E *

Code 93 Maximum Length 40

* $ + $ - 2 E 4 0 E E *

Code 93 Maximum Length 50

* $ + $ - 2 E 5 0 E E *

Code 128

Enable - On

Code 128 Enable On

$+$-401EE

Code 128 Enable Off

$+$-400EE

Minimum Length - 2

Code 128 Minimum Length 1

$+$-4101EE

Code 128 Minimum Length 2

$+$-4102EE

Code 128 Minimum Length 10

$+$-4110EE

Code 128 Minimum Length 20

$+$-4120EE

Code 128 Minimum Length 30

$+$-4130EE

Code 128 Minimum Length 40

$+$-4140EE

Code 128 Minimum Length 50

$+$-4150EE

Maximum Length - 20

Code 128 Maximum Length 1

$+$-4201EE

Code 128 Maximum Length 10

$+$-4210EE

Code 128 Maximum Length 20

$+$-4220EE

Code 128 Maximum Length 30

$+$-4230EE

Code 128 Maximum Length 40

$+$-4240EE

Code 128 Maximum Length 50

$+$-4250EE

Enable UCC/EAN 128 - Off

Code 128 Enable UCC/EAN 128 On

$+$-431EE

Code 128 Enable UCC/EAN 128 Off

$+$-430EE

Labelcode 4/5

Enable - Off

Labelcode 4/5 Enable On

Labelcode 4/5 Enable Off

Convert - Off

Labelcode 4/5 Convert On

Labelcode 4/5 Convert Off

UPC-A

Enable UPC-A - On

UPC-A Enable On

UPC-A Enable Off

Send System Digit - On

UPC-A Send System Digit On

UPC-A Send System Digit Off

Send Check Digit - Off

UPC-A Send Check Digit On

UPC-A Send Check Digit Off

Convert UPC-A to EAN-13 - Off

UPC-A Convert UPC-A to EAN-13 On

UPC-A Convert UPC-A to EAN-13 Off

UPC-E

Use System Digit 0 - On

UPC-E Use System Digit 0 On

UPC-E Use System Digit 0 Off

Use System Digit 1 - On

UPC-E Use System Digit 1 On

UPC-E Use System Digit 1 Off

Convert UPC-E to UPC-A - Off

UPC-E Convert UPC-E to UPC-A On

UPC-E Convert UPC-E to UPC-A Off

Send System Digit - Off

UPC-E Send System Digit On

UPC-E Send System Digit Off

Send Check Digit - Off

UPC-E Send Check Digit On

* $ + $ - 3 8 1 E E *

UPC-E Send Check Digit Off

* $ + $ - 3 8 0 E E *

EAN/JAN

Enable EAN-8/JAN-8 - On

EAN/JAN Enable EAN-8/JAN-8 On

* $ + $ - 3 9 1 E E *

EAN/JAN Enable EAN-8/JAN-8 Off

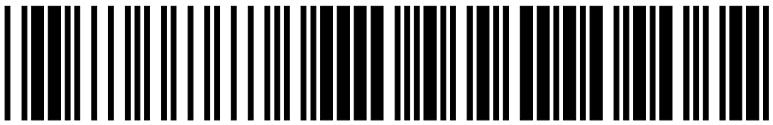
* $ + $ - 3 9 0 E E *

Enable EAN-13/JAN-13 - On

EAN/JAN Enable EAN-13/JAN-13 On

* $ + $ - 3 A 1 E E *

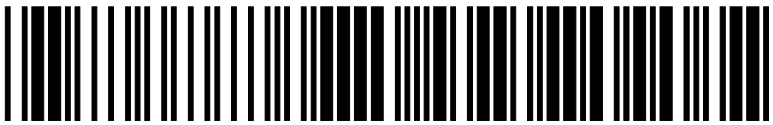
EAN/JAN Enable EAN-13/JAN-13 Off



* $ + $ - 3 A 0 E E *

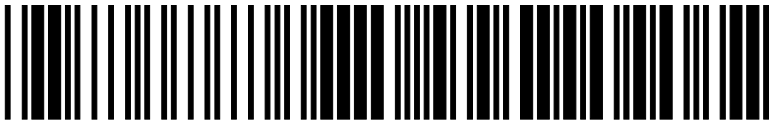
Convert EAN-13 to ISBN - Off

EAN/JAN Convert EAN-13 to ISBN On



$+$-3B1EE

EAN/JAN Convert EAN-13 to ISBN Off



$+$-3B0EE

Send EAN/JAN Checksum - Off

EAN/JAN Send Checksum On

$+$-3F1EE

EAN/JAN Send Checksum Off

$+$-3F0EE

UPC/EAN/JAN Extensions

Allow 2-Digit Extensions - On

UPC/EAN/JAN Allow 2 Digit Ext On

$+$-3C1EE

UPC/EAN/JAN Allow 2 Digit Ext Off

$+$-3C0EE

Allow 5-Digit Extensions - On

UPC/EAN/JAN Allow 5 Digit Ext On

$+$-3D1EE

UPC/EAN/JAN Allow 5 Digit Ext Off

$+$-3D0EE

Require Extensions - Off

UPC/EAN/JAN Require Extensions On

$+$-3E1EE

UPC/EAN/JAN Require Extensions Off

$+$-3E0EE

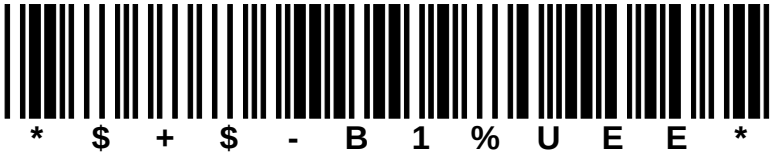
Other Controls

Autoterminator - CR

Autoterminator CR

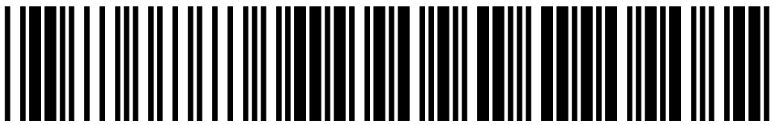
Autoterminator TAB

Autoterminator None

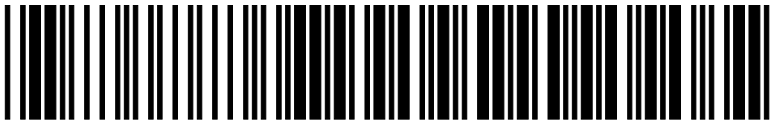


Auto-Off Timer - 5 min.

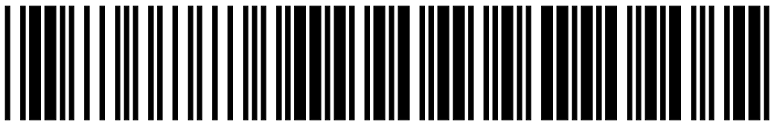
Auto-Off Timer Off



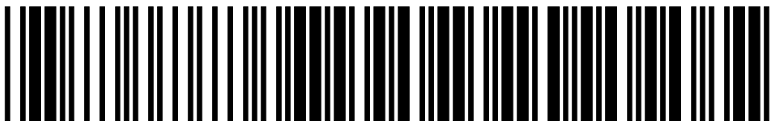
Auto-Off Timer 20 sec.



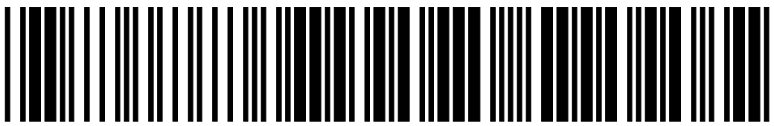
Auto-Off Timer 40 sec.



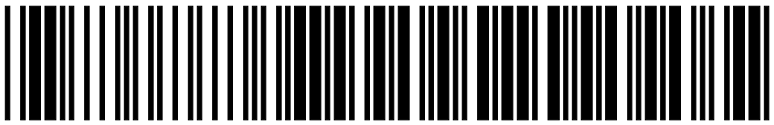
Auto-Off Timer 1 min.



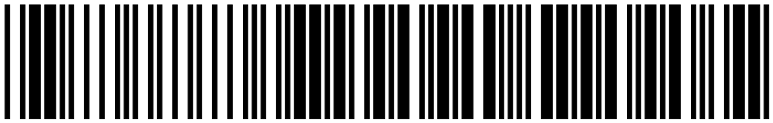
Auto-Off Timer 2 min.



Auto-Off Timer 3 min.

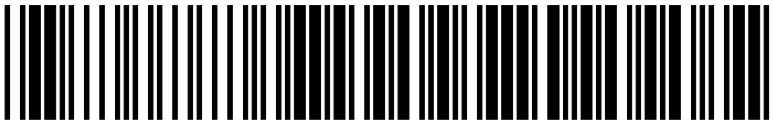


Auto-Off Timer 4 min.



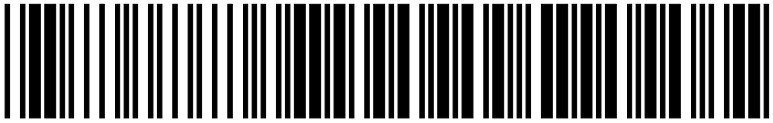
$+$-B260EE

Auto-Off Timer 5 min.



$+$-B275EE

Auto-Off Timer 6 min.



$+$-B290EE

Send Symbology Identifier - Off

Send Symbology Identifier On

$+$-B51EE

Send Symbology Identifier Off

$+$-B50EE

Good-Read Beep Tone (in Hertz) - 2400

Good Read Beep Tone 2400 Hertz

*** $ + $ - B 8 0 0 E E ***

Good Read Beep Tone 2800 Hertz

*** $ + $ - B 8 0 2 E E ***

Good Read Beep Tone 3200 Hertz

*** $ + $ - B 8 0 4 E E ***

Good Read Beep Tone 3600 Hertz

*** $ + $ - B 8 0 6 E E ***

Number of Good-Read Beeps - 1

Number of Good Read Beeps 1

$+$-B901EE

Number of Good Read Beeps 2

$+$-B902EE

Number of Good Read Beeps 3

$+$-B903EE

Number of Good Read Beeps 4

$+$-B904EE

Good-Read Beep Duration (in seconds) - 0.07

Good Read Beep Duration 0.07 sec.

*** $ + $ - B A 0 0 E E ***

Good Read Beep Duration 0.13 sec.

*** $ + $ - B A 0 1 E E ***

Good Read Beep Duration 0.18 sec.

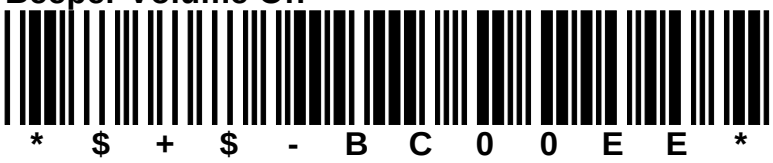
*** $ + $ - B A 0 2 E E ***

Good Read Beep Duration 0.36 sec.

*** $ + $ - B A 0 3 E E ***

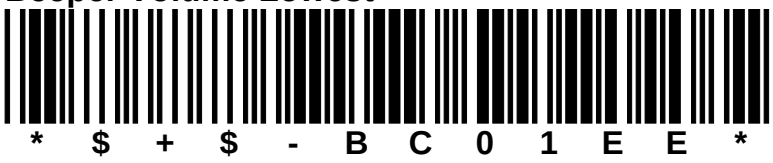
Beeper Volume - Highest

Beeper Volume Off



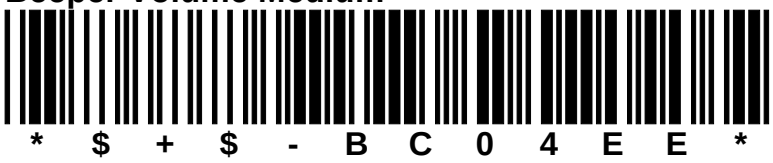
$+$-BC00EE

Beeper Volume Lowest



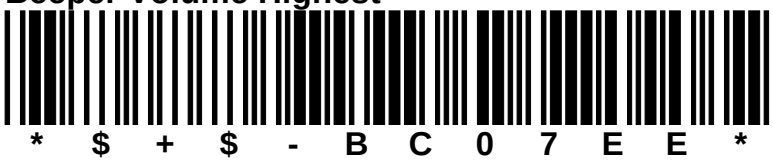
$+$-BC01EE

Beeper Volume Medium



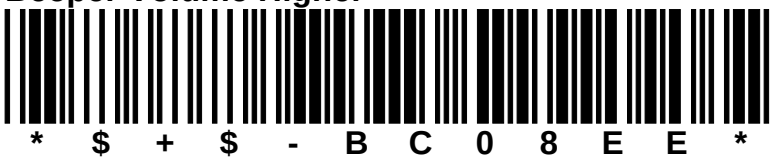
$+$-BC04EE

Beeper Volume Highest



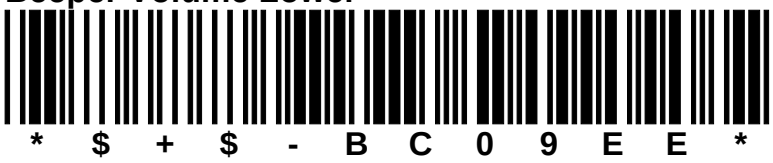
$+$-BC07EE

Beeper Volume Higher



$+$-BC08EE

Beeper Volume Lower

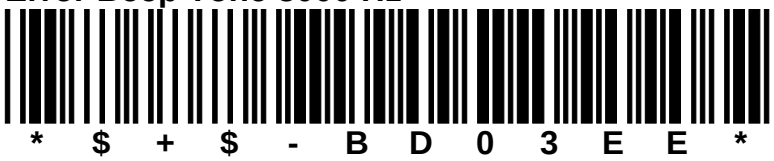


$+$-BC09EE

Error Beep Tone (in Hertz) - 2580

Error Beep Tone 2580 Hz

Error Beep Tone 3000 Hz



Error Beep Tone 3600 Hz

Error Beep Tone 4520 Hz

Long-Range Trigger Mode - Off

On = Release Scan;
Off = Spot Timeout

Long Range Trigger Mode On

$+$-D41EE

Long Range Trigger Mode Off

$+$-D40EE

Spot Beam Timeout (in seconds) 0.5

Spot Beam Timeout 0.25 sec.

$+$-D500EE

Spot Beam Timeout 0.5 sec.

$+$-D501EE

Spot Beam Timeout 1 sec.

$+$-D502EE

Spot Beam Timeout 1.5 sec.

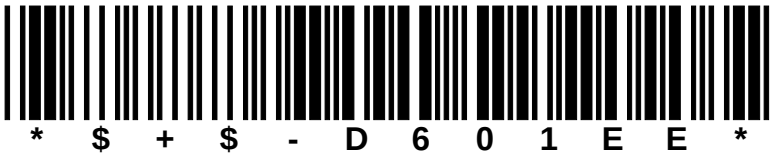
$+$-D503EE

Spot Beam Timeout 2 sec.

$+$-D504EE

Release Scan Timeout (in seconds) - 2

Release Scan Timeout 1 sec.



$+$-D601EE

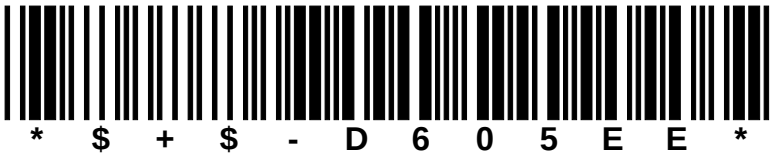
Release Scan Timeout 2 sec.

$+$-D602EE

Release Scan Timeout 3 sec.

$+$-D603EE

Release Scan Timeout 5 sec.



$+$-D605EE

Release Scan Timeout 10 sec.

$+$-D610EE

Release Scan Timeout 30 sec.

$+$-D630EE

Spotting Beam Enable - On

Spotting Beam Enable On

Spotting Beam Enable Off

Keypress Sound - Click

Keypress Sound Off

Keypress Sound Click

Keypress Sound Beep

Enable Ctl-Alt-Del Reboot - On

Enable CTL-ALT-DEL Reboot On

Enable CTL-ALT-DEL Reboot Off

Enable Trigger Programmability - On

Enable Trigger Programmability On

Enable Trigger Programmability Off

Backlight Auto-Off Timeout (in seconds) - 15

Backlight Auto-Off Timeout Off

$+$-E200EE

Backlight Auto-Off Timeout 2 sec.

$+$-E202EE

Backlight Auto-Off Timeout 5 sec.

$+$-E205EE

Backlight Auto-Off Timeout 7 sec.

$+$-E207EE

Backlight Auto-Off Timeout 9 sec.

$+$-E209EE

Backlight Auto-Off Timeout 15 sec.

$+$-E215EE

Backlight Auto-Off Timeout 20 sec.

* $ + $ - E 2 2 0 E E *

Backlight Auto-Off Timeout 30 sec.

* $ + $ - E 2 3 0 E E *

ADDENDUM

2325 Reference Guide

2325A137REFGD
July 2000
E-EQ-2325RG-C-ARC

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2 3 2 5 A 1 3 7 R E F G D

R E V I S I O N C

LANGUAGE : ENGLISH

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Notice:

The long term characteristics or the possible physiological effects of radio frequency electromagnetic fields have not been investigated by UL.

FCC Information:

This device complies with FCC Rules, part 15. Operation is subject to the following conditions:

1. This device may not cause harmful interference

   and

2. This device must accept any interference that may be received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning: Changes or modifications to this device not expressly approved by LXE, Inc., could void the user's authority to operate this equipment.

Shielded cables must be used with this unit to ensure compliance with the FCC Class A limits.

EMC Directive Requirements:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Industry Canada:

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

R&TTE Directive Requirements

Information to User

A label on the exterior of the device should resemble one of the labels shown below (the label contains the LXE part number of the installed radio card). The labels shown below and affixed to the device, identify where the device may be used and where its use is restricted. Use of a device is prohibited in countries not listed below or otherwise identified by the label.

Permitted for use in: Austria, Belgium, Denmark, Finland, Germany, Greece, Iceland, Italy, Ireland, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland, and the United Kingdom

Permitted for use in: Spain and France

Approvals:

Product	**EMI / EMC Standards**	**Safety Standards**
2325	FCC Part 15 Subpart B EN 55022 Class A EN50082-1 : 1997 EN61000-4-2 : 1995 EN61000-4-3 : 1995 EN61000-4-4 : 1995	EN 60825-1 CDRH Class 2

Transceiver	**RF Standards**	**Notes**
480824-3300 (LXE Part No.) LXE 6400 System 2.4GHz Type II PCMCIA Card	FCC Part 15, Subpart C ETS 300 328 IC-RSS 210	Unlicensed Operation Unlicensed Operation Requires License for Outdoor Use
480628-4096 (LXE Part No.) LXE 6500 System 2.4GHz Type II PCMCIA Card	FCC Part 15, Subpart C ETS 300 328 IC-RSS 139 IC-RSS 102 ETS 300 826	Unlicensed Operation Unlicensed Operation Requires License for Outdoor Use

LXE Transceiver 480628-4096 Declaration of Conformity

LXE
An EMS Technologies Company

DECLARATION OF CONFORMITY
according to Directives:

1999/5/EC	**Radio Equipment and Telecommunications Terminal Equipment and the mutual recognition of their conformity**
93/68/EEC	**CE Marking Directive**

Type of Equipment:	Direct Sequence 2.4 GHz Wireless LAN Card
Brand Name or Trademark:	LXE
Type Designation:	480628-4096
Manufacturer:	LXE Inc.
Address:	125 Technology Parkway Norcross, GA 30092-2993 USA
Year of Manufacturer:	2000

The following harmonized European Standards, technical specifications, or other normative documents have been applied:

EMI / EMC Standards:	
EN 55022 : 1995	Limits and methods of measurement of radio disturbance characteristics of information technology equipment
ETS 300 826 : 1997	Electromagnetic compatibility - Generic immunity standard, Part 1: Residential, commercial and light industrial
EN 61000-4-2 : 1995	Electrostatic discharge immunity test
EN 61000-4-3 : 1997	Radiated radio frequency electromagnetic field immunity test
EN 61000-4-6 : 1996	RF conducted immunity test
Radio Frequency Standards:	
ETS 300 328 : 1996	Radio Equipment and Systems (RES); Wideband transmission systems; Technical characteristics and test conditions for data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques
Safety Standards:	
IEC 950-2: 1991 + Amendments A1..A4	Safety of information technology equipment, including electrical business equipment

We, LXE Inc., declare that the equipment specified above complies with all Essential Health and Safety Requirements of the above Directives and Standards, as amended.

Place: LXE Inc., Norcross GA USA

Date of issue: 1 March, 2000

Signed: R. Sam Wismer

R. Sam Wismer,
RF Approvals Engineer

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Revision Notice

2325 Reference Guide

Upgrade From Revision B to Revision C

Section	Action
Regulatory Notices	Add new EMI/EMC Standards under "Approvals." Add R&TTE Directive Requirements and Declaration of Conformity.